

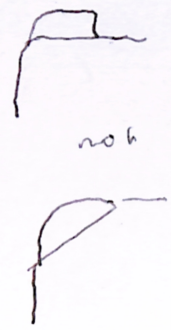
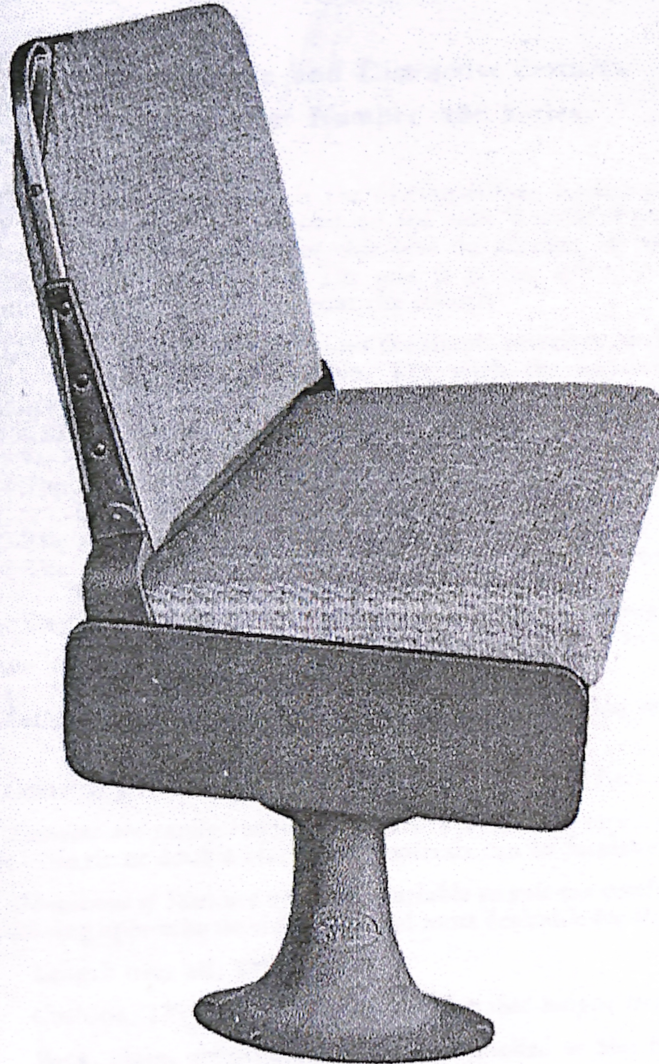


Original Seats - Car 2

Different (straight across) seat
backs were chosen* because
the AETM were setting sand-
cast brass handles made for
their 'Bib'n' Bub' set
set

 HALE & KILBURN COMPANY 



no h

No. 400A - Rattan

- Combination Spring Cushion - Plain Spring Back
- Bronze or Aluminum Grip Handle
- Steel Back Standards and Rockers
- Steel Tubular Connecting Rails
- Single or Double Stationary Footrest if desired
- Pressed Steel Aisle and Wall End Plates
- Pressed Steel Oval Pedestal Base



page twenty-one

*generously donated by the TMSV, 2003.



HALE & KILBURN COMPANY



Description and Distinctive Features Walkover Number 400 Series

The All Steel Construction is the distinguishing feature of No. 400 Seat. Every part except the cushion and back is made of pressed steel. Some of our customers prefer this seat on account of its strength, rigidity, and light weight. The seat is giving splendid service on many important lines throughout the country.

The Operating Mechanism employs the simple principle of the Channel Track Movement similar to No. 300, with the following special features:

Can be assembled in less time than any other seat.

No bolts are needed in assembling.

The Tubular Steel Connecting Rails are quickly and firmly attached to the Steel End Plates by expanding cotter pins.

The Steel Pedestal is smooth, clean, strong and light.

The cushion is automatically shifted by Steel Cams to give comfortable seating space in width.

Owing to Steel Construction, an inch more sitting surface is secured for the same over-all length, than in any other seat produced.

Cushions and Backs are of our superior construction described on page 6.

Corner Grip Handles can be applied to any No. 400 Back.

Footrests are rarely required for this type of seat, especially for city use. Single or double Stationary Footrests can be furnished if desired.

Dimensions of Seats are nearly all variable to suit car conditions. The following approximate sizes are found most desirable for this type seat:

Length over all, 33" to 35".

Cushion, 17" to 18" wide and comfortable height from floor.

Back, plain, upholstered, 19" wide, Panelled or Slat Backs, 18".

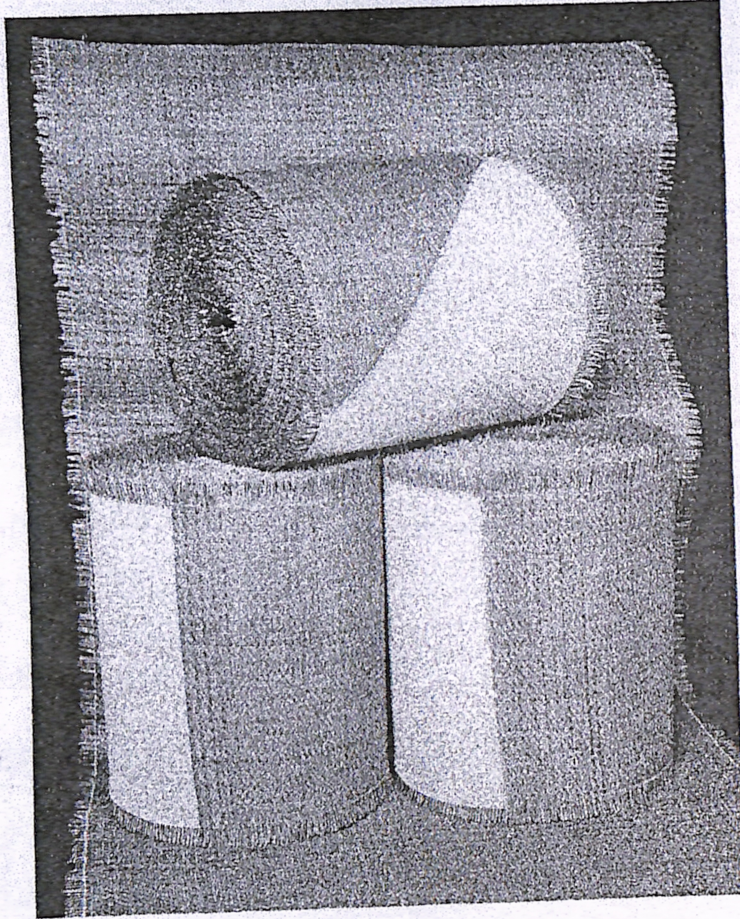
Truss angle top should preferably be 10 9-16" from floor.

Pedestal may be set back a reasonable distance to clear trap doors.

We have a variety of offset wall standards to clear ordinary wall projections.

Please see page 80 for information required in ordering seats.





*Rattan Seat Covering, Canvas Lined
Hale and Kilburn Canvas Lined Rattan Seat Covering*

As the original inventors of Canvas Lined Rattan Seat Covering we have for many years used and supplied for railway use more of this material than any other concern in the world.

We use only the best twill-weave Rattan of natural hard enamel quality, closely woven and neither treated nor bleached by chemicals. The Rattan is reinforced by heavy canvas attached by our special water-proof cement.

This high grade material is used upon all our Rattan Seats and is also sold for repairs in rolls of about 200 feet in length and any width (in even inches) up to 48 inches.
Supplied also without the canvas lining if desired.



NOYES BROS. (Sydney) LTD.
115 CLARENCE STREET,
SYDNEY.

copy
download.

THE J. G. BRILL COMPANY

PHILADELPHIA, PA.

Cable Address: "Brill," Philadelphia

London Office: 110 Cannon St., E.C.

Cable Address: "Axles," London

G. C. Kuhlman Car Co.
CLEVELAND, OHIO

American Car Company
ST. LOUIS, MO.

Wagon Manfg. Company
SPRINGFIELD, MASS.

Compagnie J. G. Brill

49 Rue des Mathurins, PARIS, FRANCE. Cable Address:

"Paris"

AGENCIES

Australasia—Noyes Brothers, Melbourne, Sydney, Dunedin, Brisbane, Perth.
Argentina, Paraguay & Uruguay—Sucesores de C. S. Clarke & Co., Calle 25 de Mayo, No. 158, Buenos Aires.
Belgium and Holland—C. Dubbleman, 48 Rue de Luxembourg, Brussels.
China—Anderson, Meyer & Co., Ltd., 4 and 5 Yuen Ming, Yuen Road, Shanghai.
Colombia and Venezuela—Weeselhoef &

Poor, Bogota and
India and Ceylon
Italy—Giovanni
L. Milan.
Natal, Transvaal
Guyana—Thomas
Ltd., Durban, Natal.
Philippine Islands, French Indo-China,
Federated Malay States, Dutch East
India—Pacific Commercial Company,
Manila, P. I.

9 FEB 1922

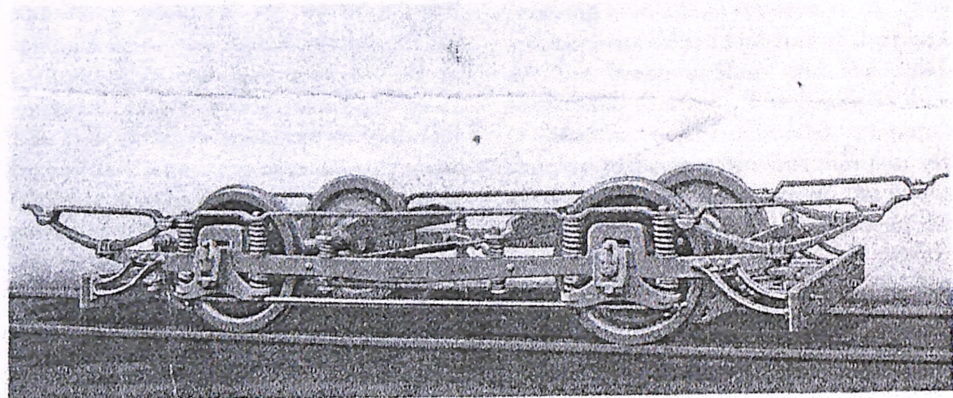


THE BRILL 21-E TRUCK

LOW LEVEL A GREAT ADVANTAGE

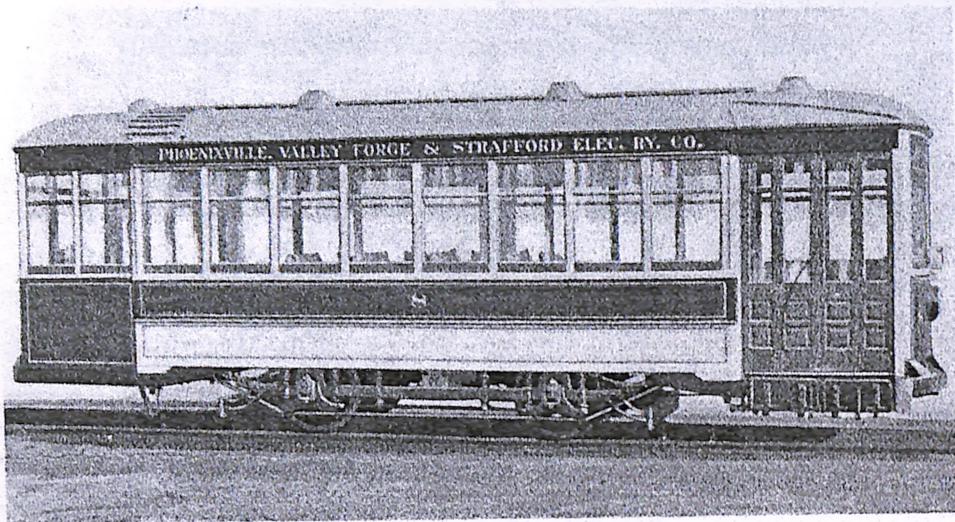
THIS truck has the great advantage of keeping the car at a low level. The reduction of a few inches in the height of the steps lessening the chance of accidents and making a great saving in the time normally taken up in loading and unloading a car having higher steps. In addition to the semi-elliptics, which are placed so that they extend

the springbase as far as is necessary to obtain an easy and steady support, there are used eight coil springs, placed on the frame directly over the journal box coil springs which support the frame. Thus it may be seen that the length of each side frame between the inner of these pairs of springs is relieved of most of the carbody weight and therefore is left free to support the



This truck is designed to take care of all single-truck cars where length is not sufficiently great to warrant the use of the "Radiax." It has the great advantage of keeping the car at a low level, lessening the chance of accidents and saving time in loading and unloading

Car 2 Brake shoes altered from
Bussells type to S&C type,
Bendigo 2006.



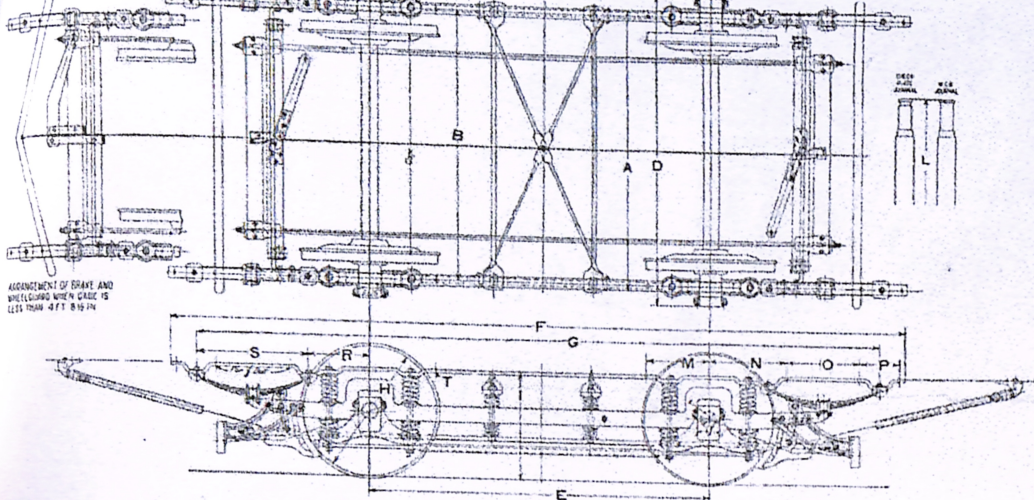
Brill Semi-Convertible Car mounted on 21-E Truck. Length of car overall, 31 ft. 6 $\frac{3}{4}$ in.; length over body, 19 ft. 6 $\frac{3}{4}$ in.; seating capacity, 30; total weight, 22,200 pounds

motors. Sufficient space is allowed in the side frames for play of the spring posts and thus the side motion of the car is cushioned, the torsional action of the springs controlling it.

Brill Wide-wing Journal Boxes are a part of every Brill 21-E Truck. This journal box has two advantages over the short wing journal box used heretofore. The first advantage is that greater stability is produced by increasing the springbase of the truck frame. The springbase of the frame of the 21-E equipped with the Wide-wing Journal Box is 7 $\frac{1}{2}$ inches greater than with the former box and 20 inches greater than that of trucks having the journal springs on top of the box. The second advantage of the Wide-wing Journal Box is that it reduces the stress on the truck frame by supporting the frame directly

under the body coil springs. The position of these springs makes possible the lower level of the car and their equal bearing guarantees the upright position of the journal boxes, preventing tilting and sticking in the frame jaws. Being grouped in pairs, the springs have large carrying capacity without stiffness. Cars of longer dimensions are provided for by the setting of truss pipes upon the ends of the post stays, forming substantial trusses.

Other important features of the truck are the brake system and the solid-forged side frames. The brake system is simple, easily adjusted, responds quickly to the operating mechanism and insures uniform pressure of the entire surface of the brake shoes upon the wheels. The solid-forged side frames make promise of longevity of service. They are a part of all Brill trucks.



	Gauge	3'0"	3'3 3/4"	3'6"	4'0"	4'3 3/4"	5'0"	5'2 3/4"	5'3"
A	Width Over Top Chords	5'0 1/4"	5'1 1/4"	5'4 1/4"	5'10 3/4"	6'0"	6'2 3/4"	6'5 3/4"	6'5 3/4"
B	Centers of Top Chords	4'10"	4'10 3/4"	5'2"	5'8 3/4"	5'9 3/4"	5'11 3/4"	6'2 3/4"	6'2 3/4"
D	Width Over Journal Boxes—M. C. R. Journal	6'0 1/4"	6'1 3/4"	6'4 1/4"	6'10 3/4"	7'0"	7'2 3/4"	7'5 3/4"	7'5 3/4"
	—Check Plate Journal	6'0 3/4"	6'1 3/4"	6'4 3/4"	6'10 3/4"	7'0"	7'2 3/4"	7'5 3/4"	7'5 3/4"
	—Check Plate Journal—Restricted Width	5'7 3/4"	5'8 3/4"	5'11 3/4"	6'5 3/4"	6'6 3/4"	6'9 3/4"	7'0 3/4"	7'0 3/4"
L	Length of Axle—M. C. B. Journal	5'6 1/4"	5'6 3/4"	5'10 1/4"	6'4 3/4"	6'5 3/4"	6'7 3/4"	6'10 3/4"	6'10 3/4"
	—Check Plate Journal	5'5 3/4"	5'6 3/4"	5'9 3/4"	6'3 3/4"	6'5"	6'7 3/4"	6'10 3/4"	6'10 3/4"
	—Check Plate Journal—Restricted Width	5'5 3/4"	5'6 3/4"	5'9 3/4"	6'3 3/4"	6'4 3/4"	6'7 3/4"	6'10 3/4"	6'10 3/4"

E	Wheel Base	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"
F	Total Length—With 36" Semi-Elliptic Spring	15'7"	16'1"	16'7"	17'1"	17'7"	18'1"	18'7"
	—With 30" Semi-Elliptic Spring	14'3"	14'9"	15'3"	15'9"	16'3"	16'9"	17'3"
G	Spring Base—With 36" Semi-Elliptic Spring	14'6"	15'0"	15'6"	16'0"	16'6"	17'0"	17'6"
	—With 30" Semi-Elliptic Spring	13'2"	13'8"	14'2"	14'8"	15'2"	15'8"	16'2"
M	Location of Body Bolt Hole	16"	16"	16"	16"	16"	16"	16"
N	" " " "	19 1/2"	19 1/2"	19 1/2"	19 1/2"	19 1/2"	19 1/2"	19 1/2"
P	" " " "	10"	10"	10"	10"	10"	10"	10"
O	—With 36" Semi-Elliptic Spring	26 1/2"	26 1/2"	26 1/2"	26 1/2"	26 1/2"	26 1/2"	26 1/2"
	—With 30" Semi-Elliptic Spring	18 1/2"	18 1/2"	18 1/2"	18 1/2"	18 1/2"	18 1/2"	18 1/2"
R	Location of Body End Spring Cap	15"	15"	15"	15"	15"	15"	15"
S	—With 36" Semi-Elliptic Spring	36"	36"	36"	36"	36"	36"	36"
	—With 30" Semi-Elliptic Spring	25"	25"	25"	25"	25"	25"	25"

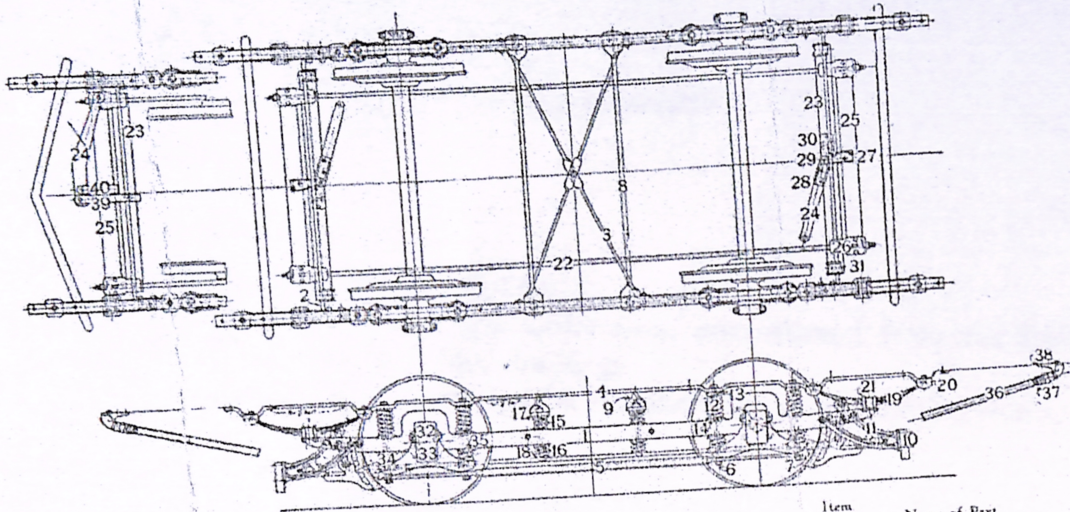
T Car Body Bolt Holes 3/4" Diameter for 3/4" Bolts.

Semi-Elliptic Springs. 36" Springs Only Furnished on Trucks Built to Restricted Width Dimensions Unless Otherwise Desired.

The Following Limitations Are Recommended

Maximum Diameter of Journal	3 1/2"
Weight of Car Body with Equipment and Passenger Load—Not to Exceed	24,000 Lbs.
Speed—Not to Exceed	25 M. P. H.
Motors—Not to Exceed	50 H. P.

H	Wheel Diameter	30"	33"	34"
I	Height of Truck with Weight of Empty Body	25 1/4"	26 3/4"	27 1/4"



Item No.	Name of Part	Item No.	Name of Part	Item No.	Name of Part
1	Side Frame	14	Body Spring Seat	27	Equalizing Lever Fulcrum
2	End Frame	15	Motor Support Spring (Top)	28	Brake Lever Casting
3	Diagonal Brace	16	Motor Support Spring (Bottom)	29	Brake Beam Stud
4	Top Chord	17	Motor Support Spring Cap	30	Brake Beam Fulcrum
5	Spring Post Stay	18	Motor Support Spring Seat	31	Brake Hanger Carrier
6	Spring Post	19	Semi-elliptic Spring	32	Journal Box Lid
7	Truss Pipe Lug	20	Semi-elliptic Spring Cap	33	Journal Box
8	Motor Support	21	Semi-elliptic Spring U-Bolt	34	Journal Box Spring
9	Motor Support Bolt	22	Bottom Brake Rod	35	Journal Box Spring Cap
10	Pilot Board	23	Brake Beam	36	Truss Pipe
11	Pilot Board Bracket	24	Brake Lever	37	Truss Pipe Adjusting Sleeve
12	Body Spring	25	Equalizing Lever	38	Truss Pipe Casting
13	Body Spring Cap	26	Equalizing Lever Casting	39	Brake Beam Strap
				40	Equalizing Lever Strap

When ordering spare parts give type of truck, order number (see plate on truck side frame), and name of part. Where possible give casting number shown on part. When part with same name is on both sides of truck, specify whether "right" or "left" hand. Use motorman's position nearest part in determining right and left hand parts.

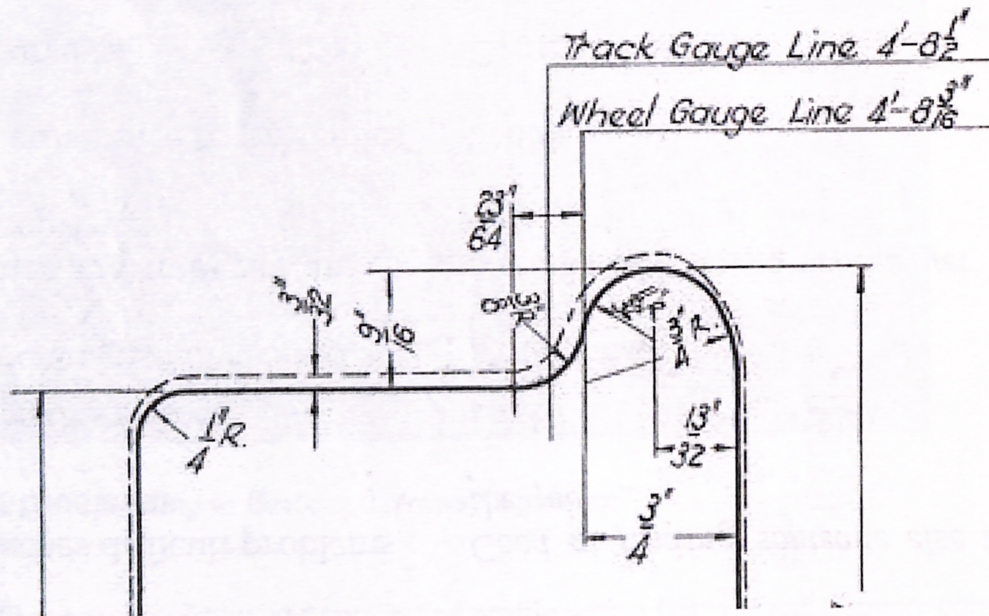
SEC Wheel Tyre – some historical notes
W. Doubleday Ballarat Tramway Museum 10/4/2005

References:

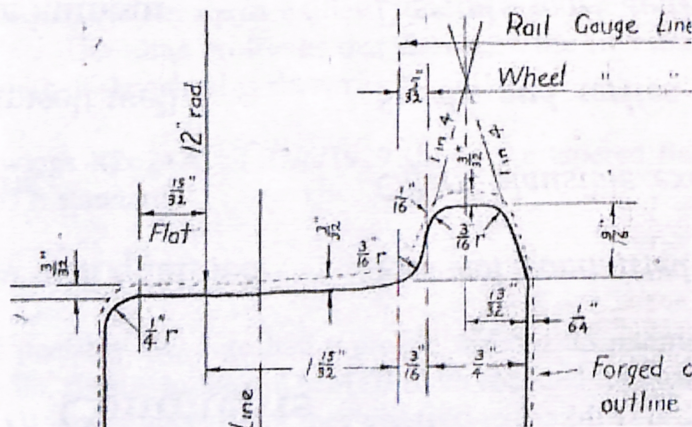
1. Bendigo Tramways email of 15/3/05,
2. Drawings held in the Ballarat Collection, microfilmed from the Public Records Office holdings of SEC drawings
3. MMTB drawings for 1A trucks held at Hawthorn Depot ex MMTB Preston.

SEC Profiles

SEC Drawing, 7515/6 – dated 27/8/1948 shows for Max. Traction trucks, 33" wheels a rounded profile or with an internal rounded fillet. Note has revision dates A of 8/2/32 and B of 17/9/1934. Drawing title block shows it was traced, then checked and signed off. Possibly traced accurately from the MMTB drawing – no MMTB drawing reference which is unusual. (This drawing is held by both Ballarat and Bendigo)

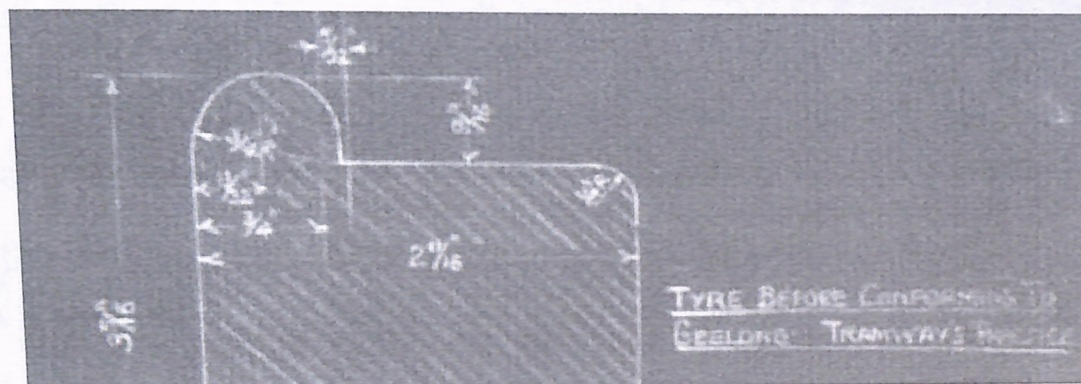


SEC Drawing – VW4/? (Bendigo holdings) shows the adoption of the MMTB profile – drawing prepared 20/12/1951 and gives reference to MMTB drawing numbers.

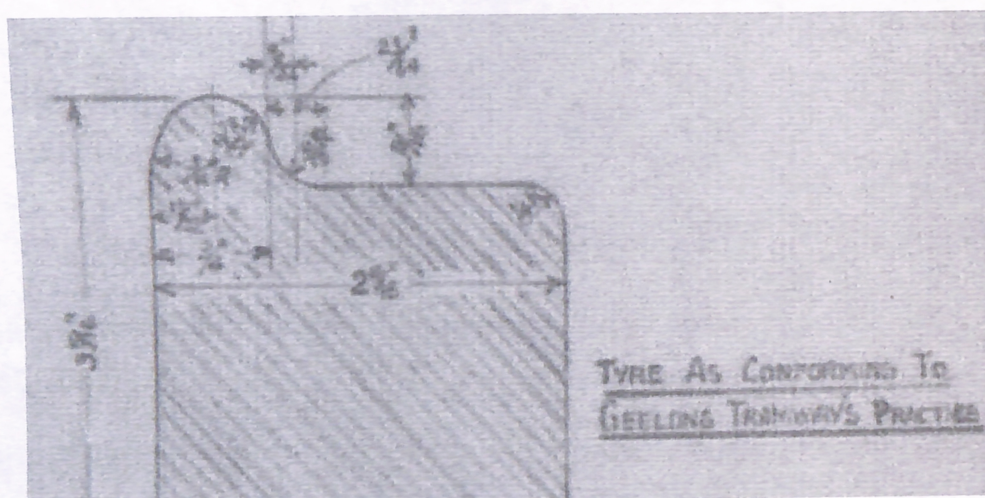


taper 1 in 16.

SEC Drawing BA – T7 – 7644, dated 18/8/1936 – shows the original Ballarat (ESCo) profile and that adopted from the Geelong profile. Image scanned from microfilm – not sharp.



“Tyre before conforming to Geelong Tramways Practice”



“Tyre as conforming to Geelong Tramway’s practice”

Would appear that ESCo had very round profile with a flat tyre and a square corner or fillet, while Geelong used a profile similar to the old MMTB (PMTT?) profile.

A note on SEC drawing BA-T7-7642, dated 11/11/1935, notes that the profile was “Used on old cars, old standards ? fillets, MMTB type tyres now used on all trams – width 3 1/8””. The same profile as that shown on the first drawing in these notes, though the width of the wheel is shown as 3”.

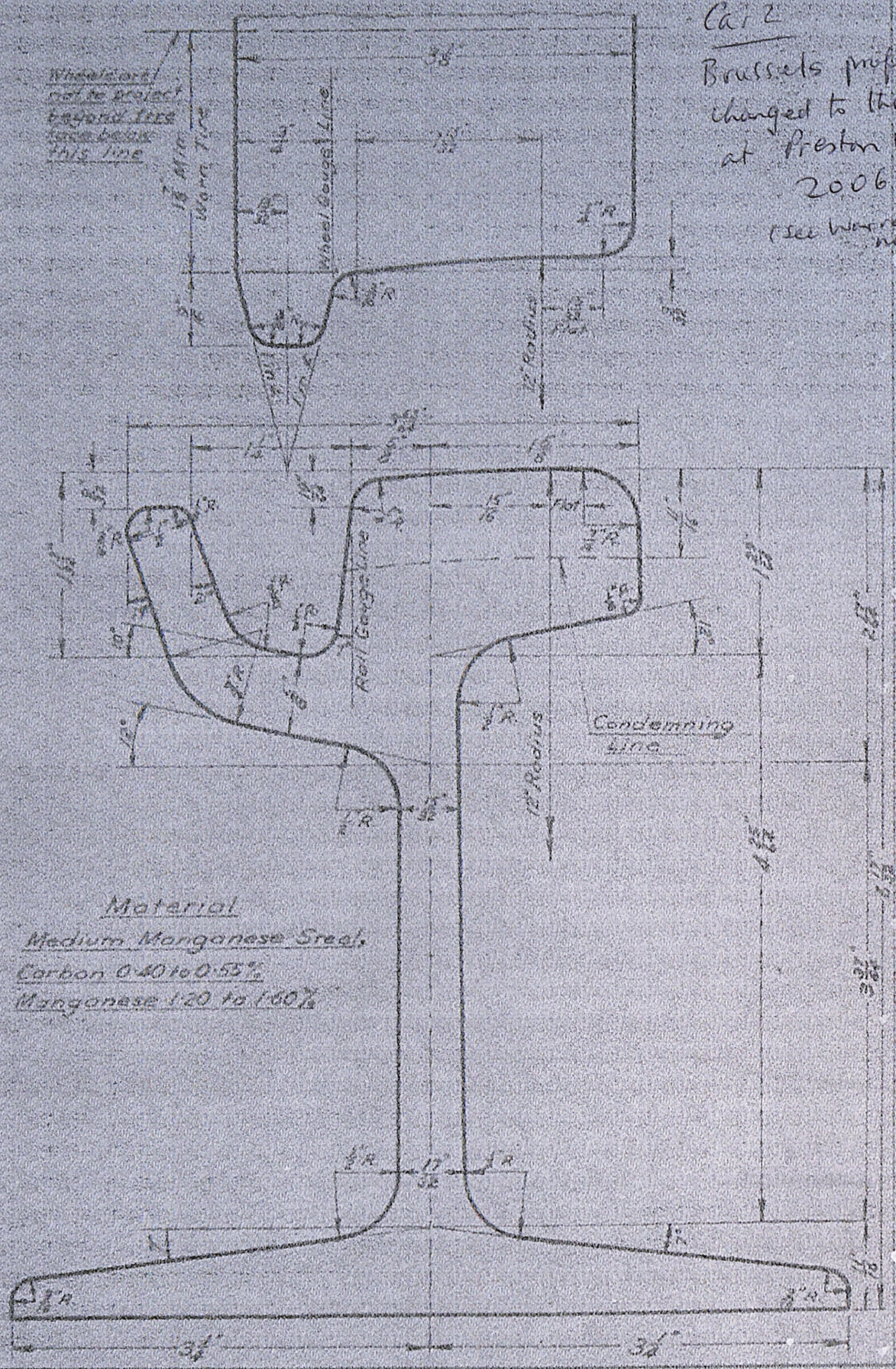
MMTB Drawings R2624A, of 27/6/1929 shows the tapered flange profile that was then the MMTB standard.

Conclusions

Ballarat and possibly Bendigo had a profile without an internal fillet, adopted the Geelong profile, similar to the old MMTB (with rounded internal fillet) profile in the mid 1930’s. It would appear that they changed to the MMTB tapered flange profile during 1951 – possibly when they acquired more bogie trams.

Car 2
 Brussels profiles
 changed to this
 at Preston WS
 2006
 (see Warren's notes
 2005)

Wheel (or) not to project beyond tire face back this line



Material
 Medium Manganese Steel,
 Carbon 0.40 to 0.55%,
 Manganese 1.20 to 1.60%

GROOVED RAIL
102 LB. PER YARD
AND TIRE PROFILE

MELBOURNE & METROPOLITAN TRAMWAYS BOARD				
DATE	10/06 <i>[Signature]</i> DEPUTY CHAIRMAN			
DRAWN	TRACED	CHECKED	PASSED	APPROVED
A.W.N.	H.B.S.	J.C.G.	K.C.P.	[Signature]
SCALE	FULL SIZE	P13889		

Descriptive Publication C 16.

“WESTINGHOUSE”



REGISTERED

Type SV Valves

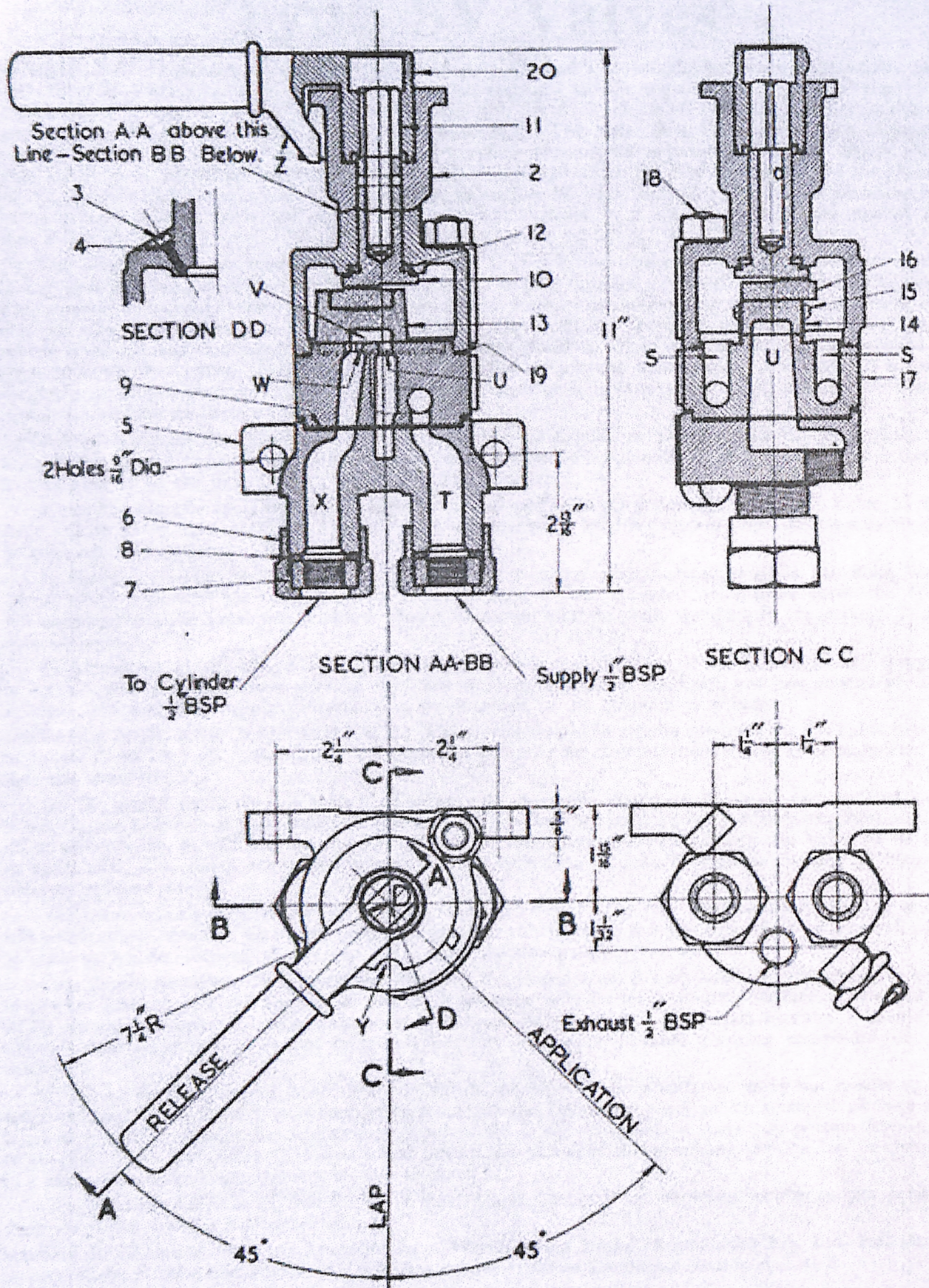
WESTINGHOUSE BRAKE (AUSTRALASIA) PTY. LTD.

HEAD OFFICE AND WORKS:

CONCORD WEST, N.S.W.

Postal Address: P.O. Box 21, Burwood, New South Wales.

1952.



Type SV Valves

DESCRIPTION: Referring to the sectional views AA, BB and CC, the device consists essentially of a Slide Valve 13 with a cavity V in its lower side, so arranged that it registers at the proper time with suitable ports W and U in the Valve Seat 17, to supply air to or release air from the cylinder or volume connected to the left hand side of the Pipe Bracket 5. The Valve Seat 17 contains ports connected respectively with the cylinder or volume to be supplied with air, the exhaust, and the air supply. The Slide Valve 13 is moved by turning the removable Handle 20 which fits over the top end of the Handle Pin 11 and to which is rigidly attached the Slide Valve Key 10. The bottom end of the Slide Valve Key 10 forms an eccentric with the Slipper Piece 16 which slides in a slot formed in the top of the Slide Valve 13.

The total handle movement is 90°, and removal or insertion of the Handle 20 can only take place in Lap position because of the Safety Lug Z, which can pass through the notch Y only in Lap position. This removable handle feature provides a very effective means of interlocking a group of valves so that only one may be operated at a time, because if only one handle is provided obviously only one valve may be operated and this valve must be restored to Lap position before the handle can be removed to apply it to another valve. Furthermore, if it is desired to prevent unauthorised operation of a valve or group of valves during absence of the regular operator it is only necessary to remove the handle or handles and secure these under lock and key.

OPERATION: With the Handle 20 in its extreme left hand position as shown in the plan view, the Slide Valve 13 will connect the cylinder or volume to exhaust via passage X, port W, Slide Valve Cavity V, and port U to the exhaust tapping in the Pipe Bracket 5.

When the Handle 20 is moved through 45° to its middle or Lap position the Slide Valve 13 will have moved to its mid position, and all ports are blanked. In this position only, the Handle 20 may be removed and replaced.

If now the Handle 20 be moved further towards its extreme right hand position, the Slide Valve 13 will uncover port W allowing Supply pressure to flow to the cylinder or volume from the space surrounding the Slide Valve and which is always in communication with the Supply via passage T and twin passages S.

Consideration of the above will show that by suitable manipulation of the Handle 20, any charging or release rate from extremely slow to very fast may be achieved as required, and any desired pressure between zero and full supply pressure may be obtained in the cylinder or volume.

INSTALLATION AND MAINTENANCE: The device should be rigidly mounted on a suitable bracket by means of the two $\frac{1}{2}$ " holes in the Pipe Bracket 5; under no circumstances should it be supported on the pipe connections.

On the side of the Body 2 is located an oiling port normally closed at its outer end by the Screw 3 and Gasket 4, and it is recommended that this oil port be filled with a good grade of very light mineral oil at such periods as will prevent the Key Washer 12 becoming dry and causing the Valve to be stiff in operation. Too much oil is detrimental. The Key Washer 12 should be renewed when its thickness becomes reduced to $\frac{1}{16}$ ".

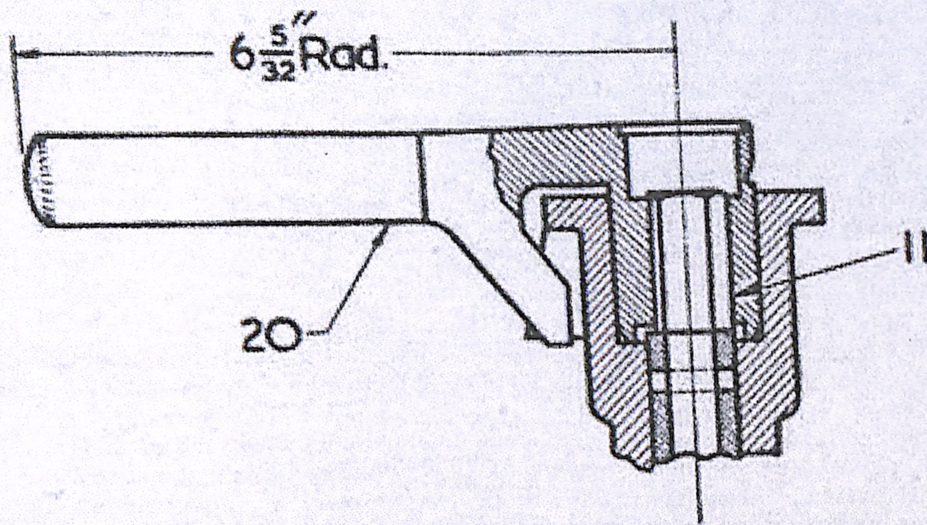
The use of oil or grease for the Slide Valve 13 and Valve Seat 17 is not recommended; the best results will be obtained from the use of dry powdered graphite rubbed on to the Valve and Seat with a small piece of chamois leather secured to the end of a small wooden paddle.

Care should be taken to see that when applying the Union Nuts 6, only sufficient tightening be done to prevent leakage past the Gaskets 8; too much pressure only causes premature failure of the gaskets, which should be replaced when they become reduced to $\frac{1}{8}$ " thick. The Pipe Ferrules 7 should be tight on their respective pipes and preferably put on with some suitable jointing compound on the threads.

It will be seen that there is no need to disturb the pipe joints in order to carry out repairs to the valve; removal of the Bolts 18 will enable the whole of the operating parts to be removed as required. If plant shutdown cannot be tolerated it is advisable to have available a spare top portion (consisting of all parts above the gasket 9) so that when repairs are necessary the operating portion can be changed in a few moments, and operations promptly resumed.

Care should be taken to see that the Valve Seat 17 and Gasket 9 are replaced in the correct position after the valve has been dismantled.

Standard Replacement Parts are available from Westinghouse Brake (Australasia) Pty. Ltd. and should be ordered by NAME and PIECE NUMBER as shown in Part Catalogue Section 4, List 3.



Many early SV valves having handles as shown above are in service, but no difference in operation results from this fact.

