

TS/EMH



42893

OFFICE OF CHIEF ENGINEER OF WAY AND WORKS,  
SPENCER STREET,  
MELBOURNE, (C1.)

3rd March, 1933.

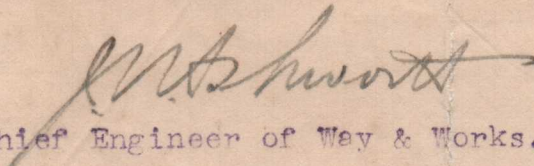


Dear Sir,

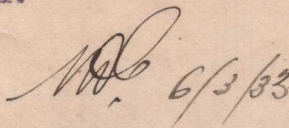
RAIL SCRUBBING.

I have to acknowledge with thanks receipt of your letter of 1st instant, together with results of the tests made with the Board's Scrubber Car at Preston on 23rd ultimo.

Yours faithfully,

  
Chief Engineer of Way & Works.

T.P. Strickland, Esq.,  
Chief Engineer,  
Melbourne & Metropolitan Tramways Board,  
673 Bourke Street,  
MELBOURNE, C.1.



3007

1st March, 1933.

The Chief Engineer of Way and Works,  
Railway Buildings,  
Spencer Street,  
MELBOURNE. C.1

Dear Sir,

RAIL SCRUBBING.

With reference to your letter of the 16th ult. I enclose herewith result of tests carried out on 23rd ult. in Miller Street, Preston with the Board's No. 5 Scrubber Car. This street is practically a flat grade, and the rails are free from corrugations.

Test runs were made with 12, 8 and 4" blocks in contact with the rail, and with various working pressures in the air cylinders.

The test sheet attached shows full particulars of air pressure, block pressure, speed, voltage and current, and will no doubt supply your Rolling Stock Branch with the information it requires.

With regard to the actual scrubbing properties, when the area of blocks and the pressure were reduced, this was difficult to determine with any precision, but it may be stated generally that pressures of 30 lbs. per sq. in. and upwards were satisfactory, but below 30 lbs. there was a falling off in effectiveness.

I presume it has not escaped your attention that the minimum length of block in contact with the rail should be about twice the length of the greatest corrugations to be dealt with.

Yours faithfully,

*W. Stoddart*  
CHIEF ENGINEER.

AO'M/EW  
1.3.33  
1/3/33

# Melbourne and Metropolitan Tramways Board

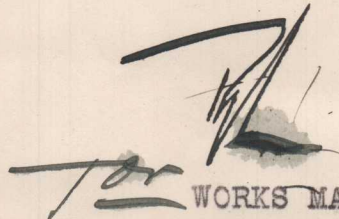
CHIEF ENGINEER'S DEPARTMENT

February 27th, 1933.

MEMO FROM WORKS MANAGER TO MR. CASS.

SCRUBBER CAR.

The attached sheet shows the results of tests carried out at Preston on Scrubber Car No.5 to obtain figures required by the Victorian Railways.

  
WORKS MANAGER.

MELBOURNE AND METROPOLITAN TRAMWAYS BOARD.

February 23rd, 1933.

SCRUBBER CAR NO.5

TESTS WITH 12, 8 OR 4 BLOCKS IN OPERATION (3, 2 OR 1 PER HOLDER) AT VARYING PRESSURES.

DATE OF TEST - 23/2/'33

PLACE OF TEST - Miller St., Preston

WATER RUNNING ON RAIL

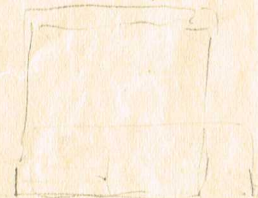
CHART NO.136.

TEST	NO. OF BLOCKS AND AREA	AIR PRESSURE lbs.sq.in,	TOTAL BLOCK PRESSURE	BLOCK PRESSURE SQ.IN.	SPEED M. P. H.	TOTAL CURRENT	VOLTAGE	ENERGY	REMARKS
1	12 - 120 sq.in.	40	6,800	57	15	115 amps	550 V.	63.250 K.W.	Parallel-with resistance
2		35	5,950	50	14	115 "	525 "	60.375 "	" " "
2		40	6,800	57	11	155 "	525 "	81.375 "	" " "
		35½	6,030	50	11.5	160 "	525 "	84.000 "	" " "
3		36	6,110	51	15	125 "	550 "	68.75 "	" " "
		34½	5,900	49	14.25	130 "	525 "	68.25 "	" " "
4		35	5,950	50	14	150 "	525 "	78.75 "	" " "
5		56	9,500	79	13.5	185 "	525 "	97.125 "	" " "
6		40	6,800	57	7	65 "	550 "	35.75 "	Series
7		32	5,430	45	9	60 "	550 "	33.00 "	" " "
8		50.5	8,600	72	5.5	100 "	550 "	55.00 "	" " "
9	8 - 80 sq.in.	29	4,930	62	16.5	105 "	550 "	57.75 "	Parallel
10		29	4,930	62	17	105 "	560 "	58.80 "	" " "
11		28	4,750	59	17	95 "	550 "	52.25 "	" " "
12		34	5,780	72	15.5	120 "	550 "	66.00 "	" " "
13		32	5,430	68	16	130 "	560 "	72.80 "	" " "
14		35½	6,020	75	14	155 "	540 "	83.70 "	" " "
15		34½	5,880	73½	14.5	155 "	560 "	86.80 "	" " "
16		28	4,750	59	18.5	95 "	550 "	52.25 "	" " "
		34½	5,880	73½	15.5	140 "	535 "	74.90 "	" " "
17		27	4,600	57½	9.5	45 "	550 "	24.75 "	Series
18		34½	5,880	73½	7	80 "	545 "	43.60 "	" " "
19	4 - 40 sq.in.	15	2,550	64	18	90 "	550 "	49.50 "	Parallel
20		3	510	13	19	70 "	550 "	38.50 "	" " "
21		11	1,870	47	18	80 "	540 "	43.20 "	" " "
22		6	1,020	25½	19	80 "	550 "	44.00 "	" " "
		5½	935	23	19.5	70 "	525 "	36.75 "	" " "
23		7	1,190	30	9.5	38 "	575 "	21.85 "	Series.
24		20	3,400	85	9	42 "	575 "	24.15 "	" " "
		20	3,400	85	9.5	35 "	555 "	19.425 "	" " "

7		32	5,430	45	9	60	"	550 "	33.00	"	"
8		50.5	8,600	72	5.5	100	"	550 "	55.00	"	"
9	8 - 80 sq.in.	29	4,930	62	16.5	105	"	550 "	57.75	"	Parallel
10		29	4,930	62	17	105	"	560 "	58.80	"	"
11		28	4,750	59	17	95	"	550 "	52.25	"	"
12		34	5,780	72	15.5	120	"	550 "	66.00	"	"
13		32	5,430	68	16	130	"	560 "	72.80	"	"
14		35 $\frac{1}{2}$	6,020	75	14	155	"	540 "	83.70	"	"
15		34 $\frac{1}{2}$	5,880	73 $\frac{1}{2}$	14.5	155	"	560 "	86.80	"	"
16		28	4,750	59	18.5	95	"	550 "	52.25	"	"
		34 $\frac{1}{2}$	5,880	73 $\frac{1}{2}$	15.5	140	"	535 "	74.90	"	"
17		27	4,600	57 $\frac{1}{2}$	9.5	45	"	550 "	24.75	"	Series
18		34 $\frac{1}{2}$	5,880	73 $\frac{1}{2}$	7	80	"	545 "	43.60	"	"
19	4 - 40 sq.in.	15	2,550	64	18	90	"	550 "	49.50	"	Parallel
20		3	510	13	19	70	"	550 "	38.50	"	"
21		11	1,870	47	18	80	"	540 "	43.20	"	"
22		6	1,020	25 $\frac{1}{2}$	19	80	"	550 "	44.00	"	"
		5 $\frac{1}{2}$	935	23	19.5	70	"	525 "	36.75	"	"
23		7	1,190	30	9.5	38	"	575 "	21.85	"	Series
24		20	3,400	85	9	42	"	575 "	24.15	"	"
		20	3,400	85	9.5	35	"	555 "	19.425	"	"
25		14	2,380	59 $\frac{1}{2}$	16.5	110	"	525 "	57.75	"	Parallel - Car stopped while still accel'g.

AS

I - lth of cov  
 = wear or glazing  
 = quality of



6862/32  
DC/EMH



K/42786

RECEIVED  
17 FEB 1933

OFFICE OF CHIEF ENGINEER OF WAY AND WORKS,  
SPENCER STREET,  
MELBOURNE, (C1.)

16th February, 1933.

Dear Sir,

... As you are perhaps aware, this Department proposes to equip a scrubber car for use on the St.Kilda-Brighton Electric Street Railway.

As disclosed in attached report by Mr. Brownbill, the question has arisen as to whether, by adopting on our scrubbing block one half the scrubbing area used by your Board with the same pressure per square inch between scrubber and rail, 40 h.p. motors would be sufficient to effectively scrub the rails in double the number of trips necessary for a car equipped with 55 h.p. motors.

The matter has been discussed with your Mr. O'Mara, who has suggested that the question could be determined by making a trial run with your scrubber car and if you agree I shall be glad if you will kindly arrange for this to be done and advise me of the conclusions arrived at.

Yours faithfully,

*J. A. Stewart*  
Chief Engineer of Way & Works.

T.P. Strickland, Esq.,  
Chief Engineer,  
Melbourne & Metropolitan Tramways Board,  
Bourke Street,  
MELBOURNE,

C.1.

COPY.

R.S.32/11177.  
Sec.33/263.

Workshops Manager's Office,  
Newport. 8th February, 1933.

SCRUBBER CAR FOR USE ON ST. KILDA -  
BRIGHTON ELECTRIC STREET RAILWAY.

The efficient working of the above type of car is dependent on three main factors, viz :

Speed,  
Pressure per square inch between scrubber  
block and rail,  
and Area of contact between scrubber and rail.

If the speed be low there is not any grinding action and the running of the car has not any effect on the rail surface.

If the pressure per square inch be too low there is not any grinding action.

Assuming the first two factors to remain constant, the amount of metal taken off the rail per trip is directly proportional to the area of contact between scrubber and rail.

The power required to propel the car, however, would also be approximately proportional to the area of contact.

The Tramways Board found that, using the area of contact adopted by them, 40 HP motors were not powerful enough and now use 55 HP motors for this service.

The cost, as previously estimated, to equip one of our cars with this size of motor and scrubbing gear would be £907. 0. 0. and considerable delay would be experienced in obtaining and installing motors and gear.

If we were to adopt half the scrubbing area used by the Tramways Board, which will be equal to that used on the car from which the Board copied the idea, and use the same pressure per square inch between the scrubber and rail, we would be able to equip a car at an estimated cost of £147, the existing motor being powerful enough for the work.

The work could then be completed in five weeks, which would be earlier than tenders for motors etc. would close, after which there would probably be a considerable delay in delivery.

It is considered that with a car so equipped we could obtain the same results by running it twice as often over the rails as would be required by the use of the more powerful motors and larger contact area.

As the length of track to be treated is of the order of only 11 miles and the difference in cost of the two installations would be £760 with a very considerable difference in the time of installation, it is submitted for the favorable consideration of the Way & Works Branch that we equip a car with half the scrubbing area of that used by the Tramways Board at an estimated cost of £147 leaving the existing motors and equipment as they are.

Any equipment so manufactured and installed would be used again in the event of the trial proving unsatisfactory and necessitating the installation of the higher powered equipment.

Chief Mechanical Engineer.

(Sgn.) E.H. Brownbill  
Actg. Engineer.

Mr. Moran

The Chief has approved  
of the suggested trials of  
scrubbing with the reduced  
size block.

M.S. 17/4/33

Mr. Stephenson, when questioned by the Works I did not  
feel able to confirm Mr. Brownbill's opinion without  
a test run, mainly because the full area of the blocks  
is never wholly in contact with the rail surface. Can  
you run a trial this week? If so please let me know  
the day before & I'll have the Car sent to Preston.  
solto 20.2.33