

Second Edition.

2M.3.05.

Part Catalogue B. 6005.

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Parts

—OF THE—

Westinghouse No. 49B

Tramway Motor.

THE BRITISH  
WESTINGHOUSE ELECTRIC & MANUFACTURING CO., Ltd.  
LONDON AND MANCHESTER.

## General Index.

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## No. 49B TRAMWAY MOTOR.

General View.

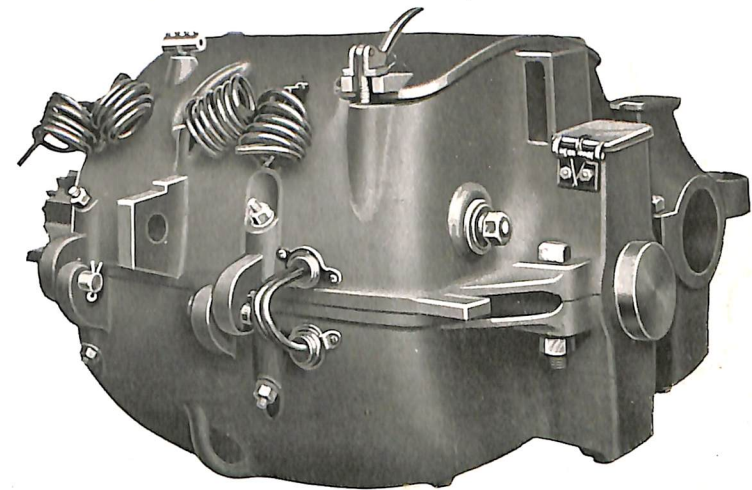


FIG. 1.

## PARTS OF No. 49B TRAMWAY MOTOR.

## STYLE NUMBER INDEX.

Style No.	Illustrated on page	List Price on page	Style No.	Illustrated on page	List Price on page
72.....	8	9	2821.....	12	13
130.....	6	9	2823.....	16	9
254 (Under No. 3626).....	12	13	2824.....	16	9
256.....	6	7	2825.....	16	9
257.....	6	7	2826.....	6	7
265.....	18	19	2827.....	6	7
304.....	10	11	2828.....	16	9
306.....	10	11	2829.....	10	11
307.....	10	11	2830.....	10	11
310.....	18	19	2833.....	14	15
323.....	8	9	2834.....	14	15
324.....	8	9	2835.....	14	15
325.....	6	7	2836.....	14	15
332.....	8	11	2837.....	—	15
336.....	10	11	2838.....	14	15
337.....	10	11	2839.....	14	15
341.....	—	17	2840.....	14	15
342.....	16	7	2841.....	14	15
343.....	16	9	2842.....	14	15
391.....	6	7	2843.....	8	9
502.....	16	9	2844.....	8	9
503.....	8	7	2845.....	8	9
504.....	8	7	2846.....	8	9
505.....	8	9	2847.....	8	9
506.....	8	7	2848.....	8	9
508.....	—	9	2849.....	8	9
509.....	16	9	2850.....	8	9
510.....	16	9	2853.....	6	7
511.....	10	11	2854.....	6	7
512.....	10	11	2856.....	6	7
513.....	10	11	2858.....	—	17
514.....	10	11	2859 (As No. 3638 in Fig.).....	6	19
515.....	10	11	2862.....	18	17
631.....	14	15	2863.....	18	17
1783.....	6	7	2864.....	16	17
1798.....	6	7	2865.....	—	17
2705.....	10	11	2866.....	16	17
2709.....	10	11	2867.....	—	17
2816.....	—	13	2868.....	12	13, 17
2817.....	12	13	2869.....	12	13
2818.....	—	13	2881.....	12	13

## PARTS OF No. 49B TRAMWAY MOTOR.

## STYLE NUMBER INDEX—Continued.

Style No.	Illustrated on page	List Price on page	Style No.	Illustrated on page	List Price on page
2885.....	—	13	3626.....	12	13
2887 (As No. 2822 in Fig.).....	12	13	3627.....	10	11
2893.....	10	11	3628.....	8	7
2894.....	—	11	3629.....	18	19
2914.....	6	7	3630.....	18	19
3024.....	18	19	3631.....	18	19
3031.....	18	19	3632.....	18	19
3032.....	18	19	3633.....	6	7
3063.....	18	7, 19	3634.....	6	7
3064.....	18	19	3635.....	6	7
3065.....	6	7, 19	3636.....	6	7
3066.....	10	11	3637.....	6	7
3068.....	8	9	3640.....	10	11
3069 (As No. 3696 in Fig.).....	16	17	3641.....	10	11
3070.....	6	19	3808.....	—	9
3071.....	8, 10, 16	9, 17	3835.....	—	7
3073.....	10	11	3838.....	—	7, 19
3079.....	8	7	8017.....	—	17
3082.....	18	19	8018.....	—	17
3087.....	8	9	9163.....	—	7
3090.....	16	17	9165.....	—	11
3108.....	10	11	9166.....	—	13
3272.....	10	11	9167.....	—	19
3279.....	6	7	9171.....	—	9
3286.....	16	17	9172.....	—	9
3287.....	16	17	9174.....	—	17
3293.....	12	13	9175.....	—	17
3294.....	—	13	9176.....	—	17
3506.....	—	7	9177.....	—	17
3620.....	8	9	9178.....	—	17
3621.....	8	7	9179.....	—	19
3622.....	10	11	9180.....	—	19
3623.....	10	11	9230.....	—	13
3624.....	10	11	9231.....	—	13
3625.....	12	13			

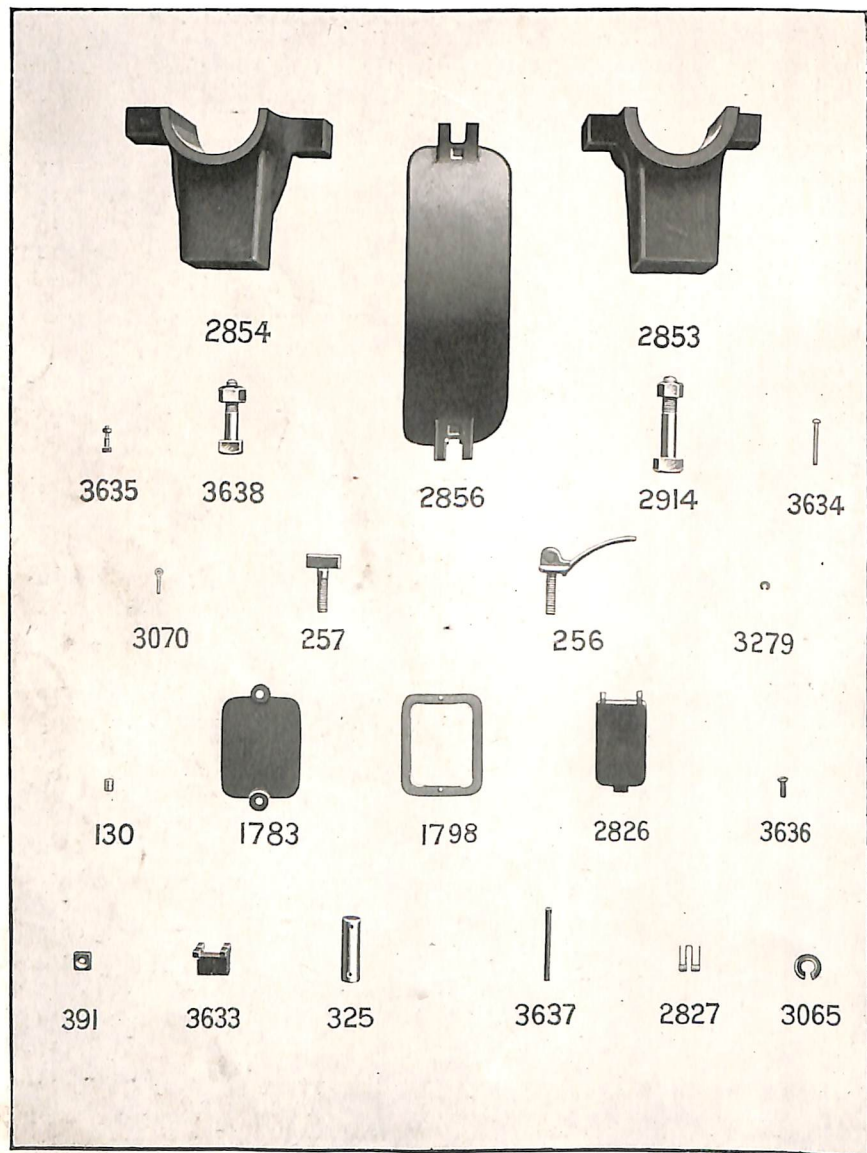


FIG. 2.

PARTS OF No. 49B TRAMWAY MOTOR.

Frame.

Style No.	Number per Motor.	Description.	Price.
			£ s d.
2853	1.	Cap under axle bearing, pinion end .....	1 7 6
2854	1.	Cap under axle bearing, commutator end ...	1 9 6
2914	8.	Bolt for holding frame together, and axle caps to frame. Without nuts or washers, $\frac{7}{8}$ " x 5".....per doz.	0 6 0
3063	8.	Nut for bolts, No. 2914, $\frac{7}{8}$ ".....per doz.	0 1 10
3065	8.	Lock washer for bolts, No. 2914, $\frac{7}{8}$ ".....per doz.	0 0 6
325	2.	Hinge pin for halves of frame, 1" x 4" .....	0 0 6
3835	4.	Cotter for No. 325, $\frac{1}{4}$ " x $1\frac{1}{2}$ " .....	0 0 5
2856	1.	Commutator cover .....	0 14 3
257	1.	T. bolt for commutator cover .....	0 0 6
256	1.	Locking lever and eye bolt, complete, for commutator cover .....	0 1 3
391	1.	Lock nut for No. 257, special, $\frac{5}{8}$ ".....per doz.	0 1 0
2826	4.	Grease box cover, with hinge pin and spring .....	0 1 6
9163	4.	Grease box cover, without hinge pin .....	0 1 3
3634	4.	Hinge pin for grease box covers, $\frac{1}{4}$ " x $2\frac{3}{4}$ " .....	0 0 3
2827	4.	Spring for grease box covers .....	0 2 3
3633	4.	Hinge for grease box covers .....	0 0 9
3635	8.	Bolt with nut for No. 3633, $\frac{1}{4}$ " x $1\frac{1}{4}$ ".....per doz.	0 1 3
3838	8.	Nut for No. 3635, $\frac{1}{4}$ " .....	0 0 5
3279	8.	Lock washer for No. 3635, $\frac{1}{4}$ " .....	0 0 3
1783	1.	Hand-hole cover .....	0 3 3
3636	2.	Screw for hand-hole cover, 24—16 x 1".....per doz.	0 0 9
1798	1.	Rubber gasket for hand-hole cover .....	0 1 9
503	4.	Wooden bushing with two holes for insulating leads from frame .....	0 1 0
504	4.	Clamp for fastening bush to frame.....each	0 0 3
3621	8.	Screw for No. 504, No. 14—24 x $\frac{1}{2}$ ".....per doz.	0 0 4
506	1.	C.B. ground terminal .....	0 3 0
3506	4.	Binding screws for ground terminals, No. 14—24 x $\frac{5}{8}$ " .....	0 0 4
3628	1.	Fuller board upper field insulating shield.....	0 2 6
3079	6.	Copper belt rivet for rivetting No. 3628 to frame, No. 7 x $\frac{3}{4}$ " .....	0 0 4
342	4.	Oil plug.....each	0 3 3
3637	4.	Brass tube over bearings, $\frac{3}{8}$ " x $4\frac{1}{2}$ " .....	0 1 0

Order by Style Number.

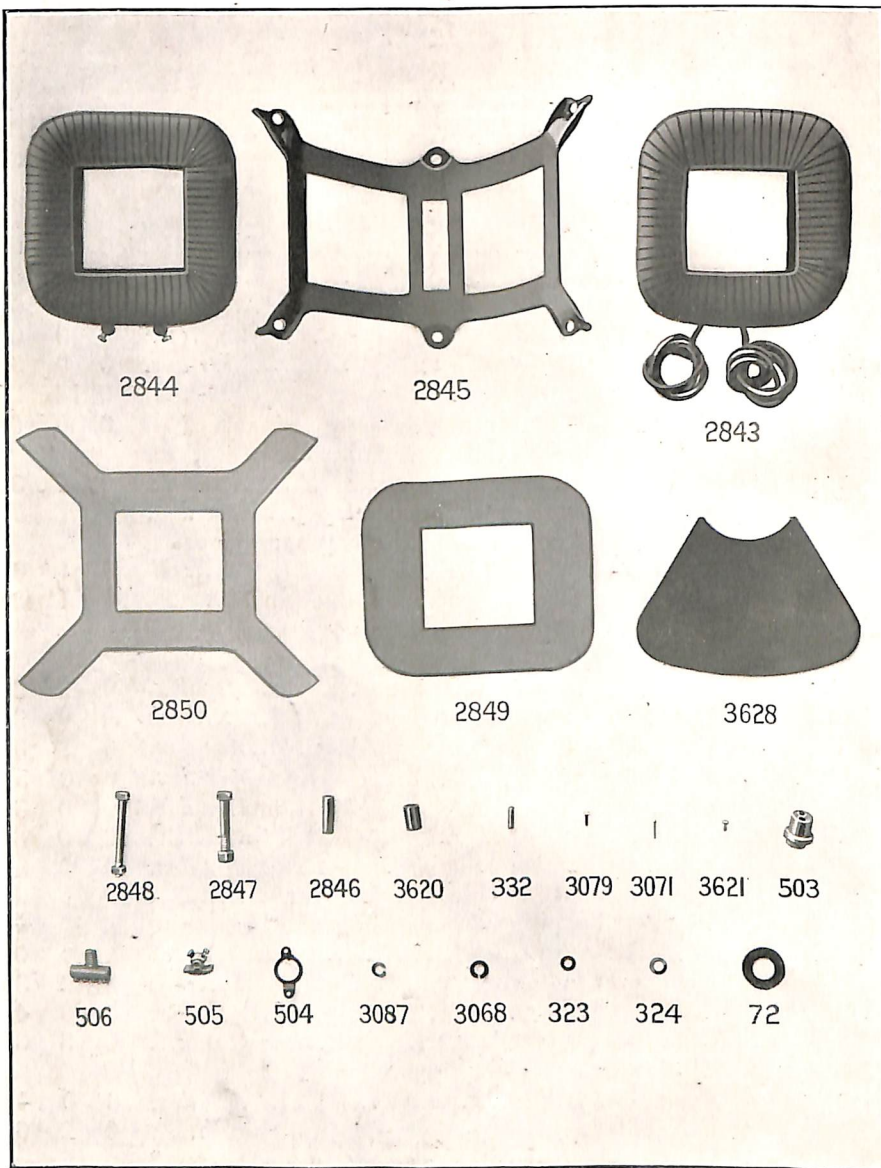


FIG. 3.

PARTS OF No. 49B TRAMWAY MOTOR—Cont.

Bearings.

Style No.	Number per Motor.	Description.	Price.
			£ s. d.
2825	2.	Split axle bearing, 3 3/4" x 7" (babbitted) ...each	1 2 0
3808	2.	Split axle bearing, 4" x 7" (babbitted) ...each	1 2 0
2824	1.	Split armature bearing, pinion end, 2 3/4" x 7 1/8", grease lubrication.....	1 2 9
9172	1.	Split armature bearing, pinion end, 2 3/4" x 7 1/8", oil lubrication .....	1 3 3
2823	1.	Solid armature bearing, commutator end, 2 3/4" x 6", grease lubrication .....	1 1 0
9171	1.	Solid armature bearing, commutator end, 2 3/4" x 6", oil lubrication .....	1 1 0
130	4.	Dowel pin for bearings .....	0 0 3
502	1.	Dust cap for solid armature bearing .....	0 0 3
508	4.	Tin tube with oil wick .....	0 0 9
510	4.	Tin tube .....	0 0 3
2828	4.	Wick .....	0 0 3
509	4.	Spiral spring .....	0 0 3
343	4.	Oil feed wire .....	0 0 6

Field Coils.

2843	2.	Upper field coil with cable leads complete..each	6 10 6
2844	2.	Lower field coil with cable terminals complete .....	6 9 0
2845	2.	C.B. coil support .....	1 4 3
505	4.	Lower field coil terminals .....	0 1 3
3621	8.	Binding screw for No. 505. No. 14—24 x 1/2" .....	0 0 4
2849	4.	Leatheroid washer for insulating field coil from frame .....	0 2 0
2850	4.	Leatheroid washer for insulating field coil from support .....	0 2 0
2847	4.	Bolts for fastening support to frame, 5/8" x 3 3/4" .....	0 3 0
2848	8.	Bolts for fastening support to frame, 1/2" x 5" .....	0 2 4
72	8.	Washer for No. 2848, 1/2" .....	0 0 3
3068	4.	Lock washer for No. 2847, 5/8" .....	0 0 5
3087	8.	Lock washer for No. 2848, 1/2" .....	0 0 5
3620	4.	Gas pipe for No. 2847, 3/4" x 1 1/2" .....	0 0 3
324	4.	Lead washer for No. 2847 .....	0 0 3
323	8.	Lead washer for No. 2848, 1/2" .....	0 0 3
3071	12.	Split pin for Nos. 2847 and 2848, 1/8" x 1" .....	0 0 3
2846	8.	Fullerboard and mica bush for No. 2848...each	0 0 9

Order by Style Number.

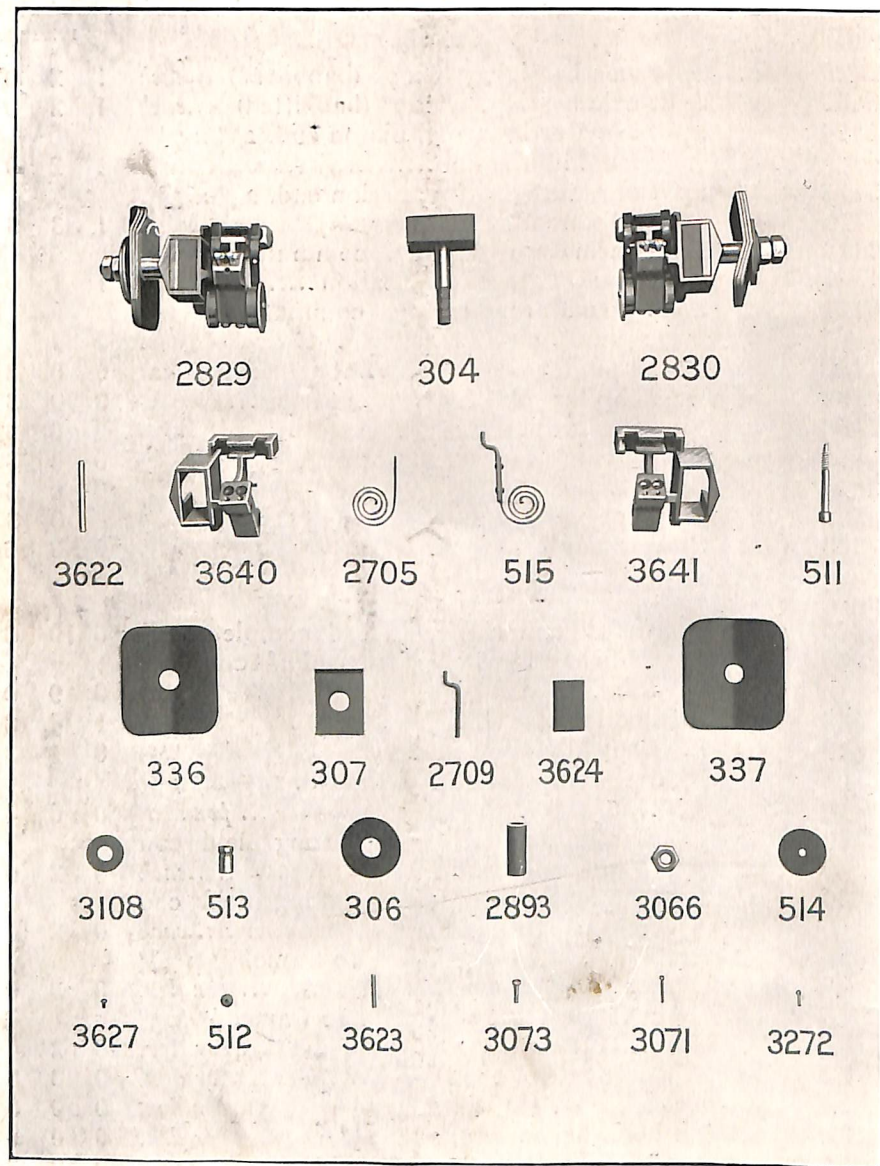


FIG. 4.

PARTS OF No. 49B TRAMWAY MOTOR—Cont.

Brush Holders.

Style No.	Number per Motor.	Description.	Price.		
			£	s.	d.
2829	1.	Right hand brush holder, complete .....	3	3	6
2830	1.	Left hand brush holder, complete .....	3	3	6
3640	1.	Right hand brush holder without parts .....	1	6	9
3641	1.	Left hand brush holder without parts .....	1	6	9
2894	2.	Brush holder bolt, complete, with insulation, tube, nuts, washers, &c. ....each	0	12	0
304	2.	Brush holder bolt without detail parts ...each	0	6	0
3066	4.	Nut for No. 304, $\frac{3}{4}$ " .....	0	1	3
3108	2.	Plain washer, $\frac{3}{4}$ " .....	0	0	3
3071	2.	Split pin, $\frac{1}{8}$ " x 1", for bolt No. 304.....per doz.	0	0	3
2893	2.	Fullerboard and mica bushing for bolt, No. 304 .....	0	1	0
515	4.	Brush holder spring and tip, complete ...each	0	3	3
2705	4.	Brush holder spring without tip .....	0	2	3
2709	4.	Hard copper tip for spring .....	0	1	0
3627	8.	Copper rivets, $\frac{3}{16}$ " x $\frac{7}{16}$ ", for fastening tip to spring .....	0	0	3
336	3.	Bent fullerboard washer R.H.....each	0	1	0
337	3.	Bent fullerboard washer L.H.....each	0	1	0
306	4.	Round fullerboard washer .....	0	0	3
307	2.	Sheet steel guide piece .....	0	1	6
9165	4.	Worm screw and collar, complete .....	0	1	6
511	4.	Worm screw without collar.....each	0	1	0
512	4.	Collar for worm screw .....	0	0	6
3272	4.	Split pin for collar, $\frac{3}{32}$ " x $\frac{5}{8}$ " .....	0	0	3
513	4.	Worm wheel .....	0	1	3
3622	2.	Worm wheel spindle.....each	0	0	6
514	2.	Washer for worm wheel spindle .....	0	0	6
3623	2.	Pin for holding up springs, $\frac{3}{16}$ " x $1\frac{1}{4}$ "...per doz.	0	0	6
3073	4.	Machine screw for clamping leads, No. 14— 24 x 1" .....	0	0	6
3624	4.	Carbon brush, $\frac{1}{2}$ " x $1\frac{1}{2}$ " x $2\frac{3}{4}$ " .....	0	0	9
332	2.	Brass sleeve for leads from brush holder...each	0	0	6

Order by Style Number.

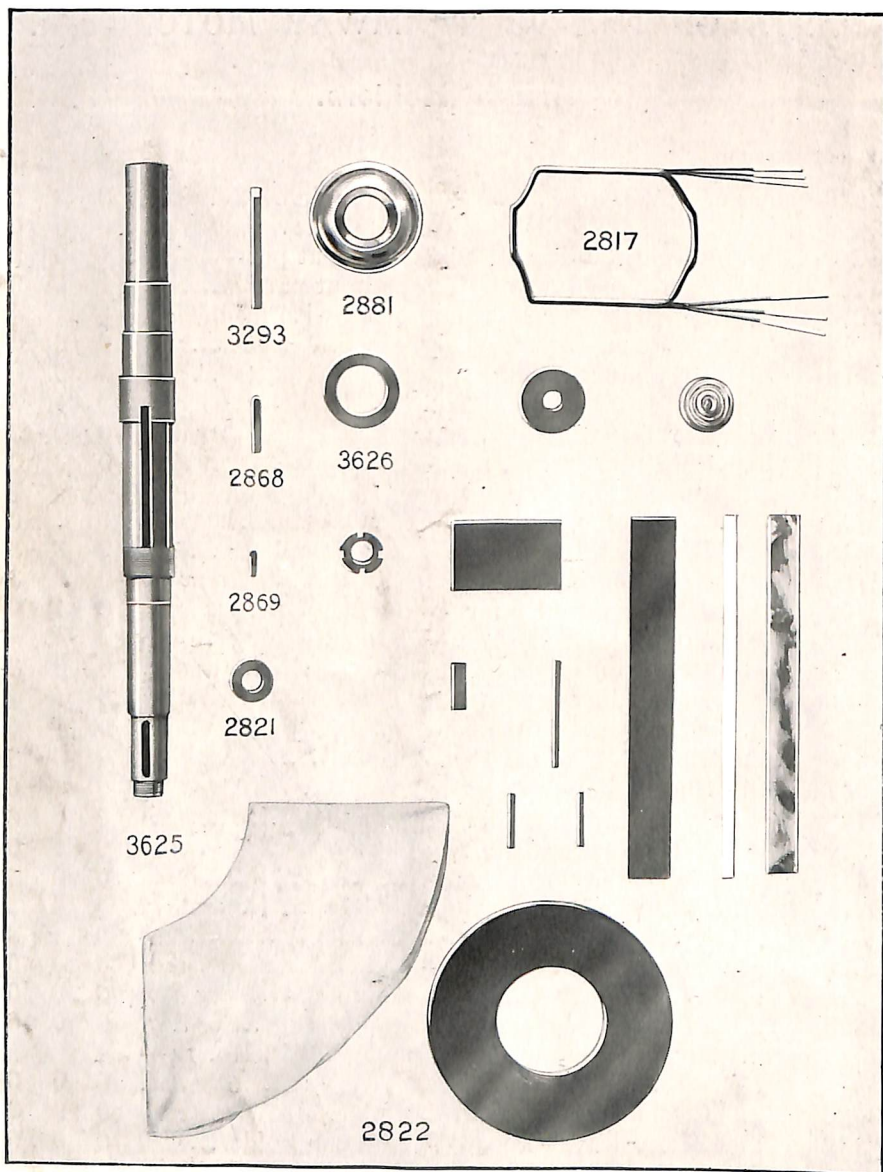


FIG. 5.

PARTS OF No. 49B TRAMWAY MOTOR—Cont.

Armature.

Style No.	Number per Motor.	Description.	Price.
			£ s. d.
2816	1.	Armature complete, including commutator and shaft .....	43 5 0
2817	35.	Armature coil .....	0 5 6
2818	1.	Complete set of rewinding material for one armature, including coils and insulation .....	11 15 0
3625	1.	Shaft, turned, threaded, and key seated.....	2 10 6
2869	1.	Steel key for commutator, $\frac{1}{2}$ " x $\frac{1}{2}$ " x 2", rd. ended.....	0 0 9
3293	1.	Steel key for laminations, $\frac{9}{16}$ " x $\frac{3}{4}$ " x $7\frac{3}{8}$ ", sq. ended.....	0 1 0
2868	1.	Steel pinion key, $\frac{5}{8}$ " x $\frac{9}{16}$ " x $3\frac{3}{4}$ " .....	0 0 9
3626	1.	Armature nut, drilled and tapped .....	0 3 3
3294	1.	Armature nut locking screw, $\frac{1}{2}$ " x $\frac{3}{4}$ ", per doz.	0 1 3
2881	2.	M.I. wiper ring .....	0 8 4
254	1.	Pinion nut .....	0 1 0
2821	1.	Lock washer for end of shaft, $1\frac{3}{4}$ " .....	0 0 5
2887	1.	Insulating material for rewinding armature, includes:— $\frac{1}{2}$ -lb. black Hartford tape, 6 yards surgical braid, 2 fullerboard strips, 6 pieces best mica white, 25 yards waxed twine, 4 pieces bond paper and mica, 6 pieces bond paper and mica, 2 oil duck washers, 3 oil duck strips, 35 paraffined fullerboard cells, 1 drilling cap..	0 12 0
2885	1.	3 lb. steel banding wire .....	0 1 7
9230	39.	Banding clip, short .....	0 0 6
9231	26.	Banding clip, long .....	0 0 9
9166	6.	Banding clip, anchor .....	0 1 3

Order by Style Number.

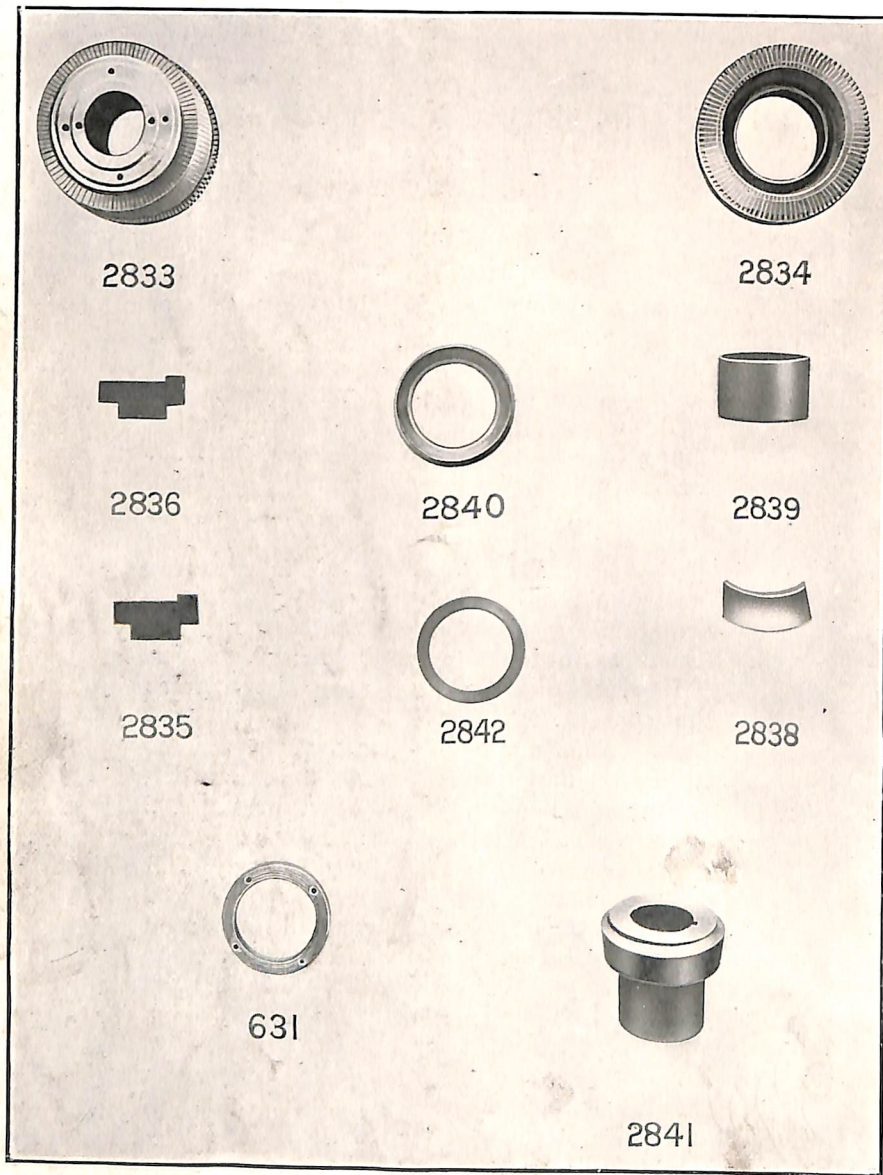


FIG. 6.

PARTS OF No. 49B TRAMWAY MOTOR—Cont.

Commutator.

Style No.	Number per Motor.	Description.	Price.		
			£	s.	d.
2833	I.	Commutator complete .....	14	2	0
2834	I.	Set of commutator and mica segments (105) set and finished (but without bush, etc.)	9	11	0
2835	105.	Copper segment, unfinished .....each	0	1	3
2836	105.	Mica segment, unfinished .....each	0	0	6
2837	I.	Set of mica segments (111) finished .....	2	19	0
2838	I.	Mica V ring.....each	0	15	0
2839	I.	Mica bushing .....	0	6	1
2841	I.	C.I. commutator bush .....	1	0	3
631	I.	C.B. commutator nut.....	0	12	9
2842	I.	Washer, 4½" i.d. x 5¾" o.d. ....	0	0	3
2840	I.	Commutator V ring..... each	1	7	0
2869	I.	Steel key, ½" x ½" x 2" .....	0	0	9

Order by Style Number



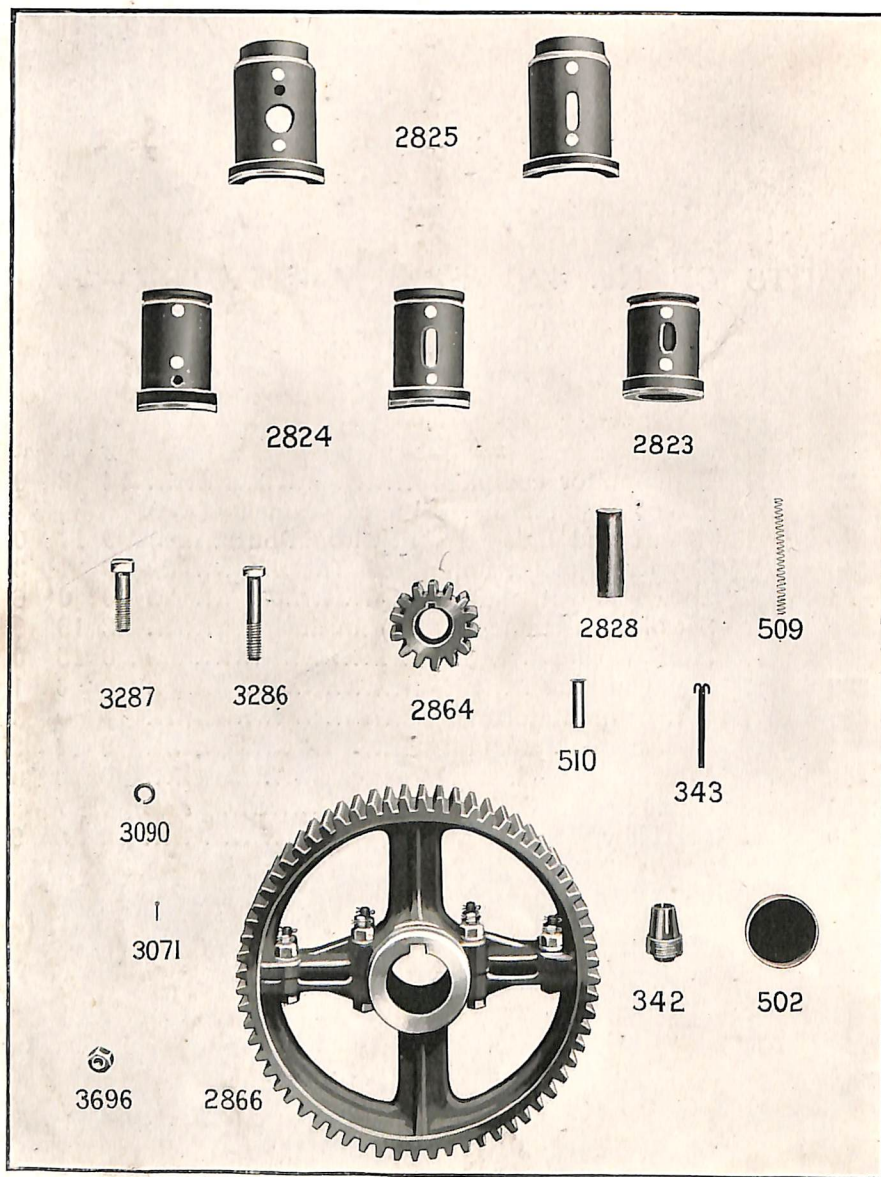


FIG. 7.

PARTS OF No. 49B TRAMWAY MOTOR—Cont.

Gears.

Style No.	Number per Motor.	Description.	Price.		
			£	s.	d.
2864	1	Forged steel pinion, 14 teeth, 5" face .....	0	19	3
2865	1.	Forged steel pinion, 18 teeth, 5" face .....	1	2	3
2866	1.	Steel gear wheel, 68 teeth, 5" face, 4" bore ...	4	16	4
8017	1.	Steel gear wheel, 68 teeth, 5" face, 3 3/4" bore	4	16	4
2867	1.	Steel gear wheel, 64 teeth, 5" face, 3 3/4" bore	4	12	4
8018	1.	Steel gear wheel, 64 teeth, 5" face, 4" bore ...	4	12	4
3287	4.	Machine bolt, without nut or washer, for bolting together halves of gear, 3/4" x 3 1/2", .....	0	3	6
		..... per doz.			
3286	4.	Machine bolt, without nut or washer, for bolting together halves of gear, 3/4" x 5", .....	0	4	6
		..... per doz.			
3090	8.	Lockwashers, 3/4" .....	0	0	5
3069	8.	Nut, 3/4" .....	0	1	3
3071	8.	Split pin, 1/8" x 1" .....	0	0	3
2868	1.	Steel pinion key, 5/8" x 9/16" x 3 3/4" .....	0	0	9
341	1.	Steel gear key, 1" x 1" x 5" .....	0	2	4

Gear Case.

Style No.	Number per Motor.	Description.	Price.		
			£	s.	d.
*2858	1.	M.I. gear case complete, Nos. 2862 and 2863, without bolts for fastening to frame	5	17	0
2862	1.	M.I. upper half gear case patt., No. 1174, without bolts .....	3	6	3
2863	1.	M.I. lower half gear case, patt. No. 1175, with bolts, Nos. 310 and 265	2	11	0
*9174	1.	M.I. gear case complete, Nos. 9175 and 9176. ....	5	17	0
9175	1.	M.I. upper half gear case, patt. No. 9632, without bolts .....	3	6	3
9176	1.	M.I. lower half gear case, patt. No. 5807, with bolts, Nos. 265 and 9177....	2	11	0
9177	1.	Bolt for holding halves together, 3/8" by 3 1/4", used with Nos. 9174 and 9178...per doz.	0	4	6
*9178	1.	M.I. gear case complete, Nos. 9179 and 9180 .....	5	17	0

\* Style Nos. 2858, 9174 and 9178 (as complete gear cases) are interchangeable, as are also the halves of Style Nos. 9174 and 9178. The halves of No. 2858, however, are not interchangeable with any other style.

Order by Style Number.

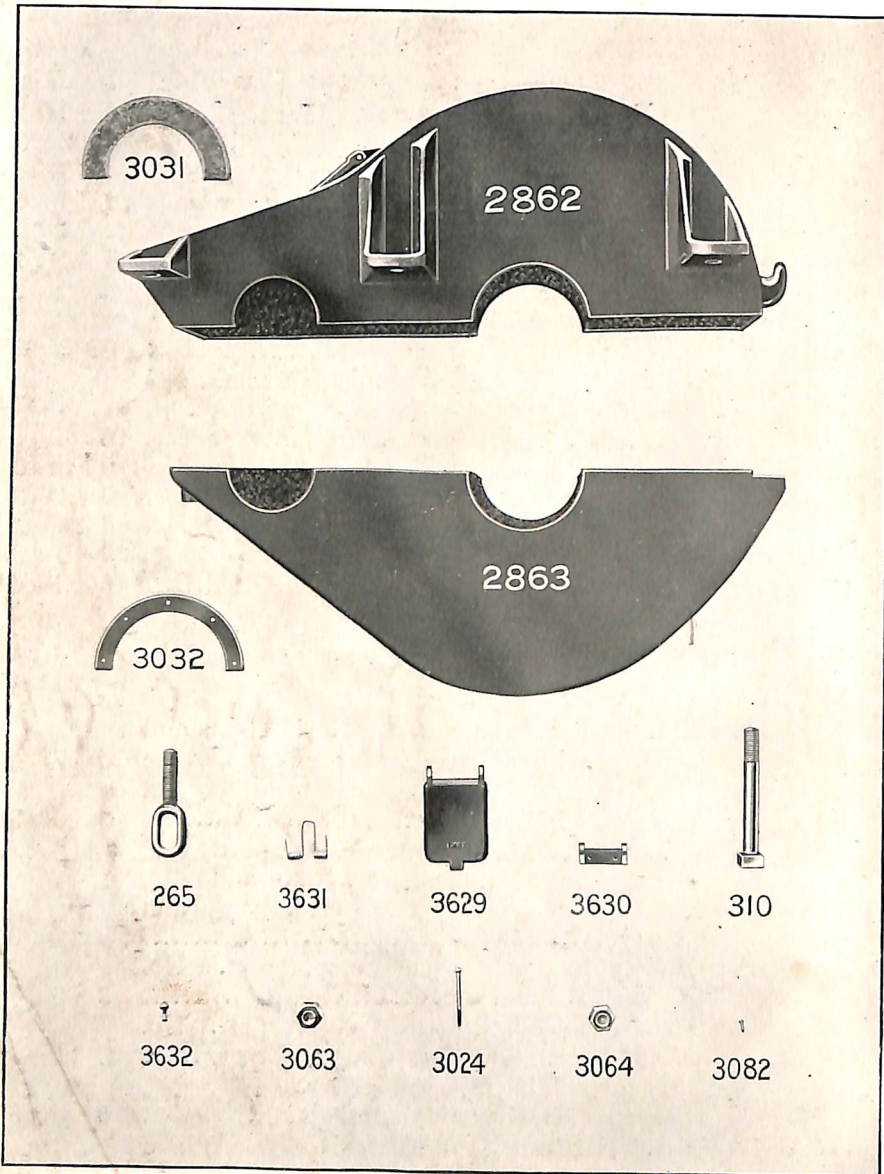


FIG 8.

PARTS OF No. 49B TRAMWAY MOTOR—Cont.

Style No.	Number per Motor.	Description.	Price.		
			£	s.	d.
9179	1.	M.I. upper half gear case, patt. No. 7670, without bolts .....	3	6	3
9180	1.	M.I. lower half gear case, patt. No. 7671, with bolts, Nos. 265 and 2859 .....	2	11	0
2859	3.	Bolt for holding gear case to frame, $\frac{7}{8}$ " x $3\frac{1}{2}$ ", .....	0	4	6
310	1.	Bolt for bolting the halves of gear case together, $\frac{7}{8}$ " x 7", for No. 2858 only .....	0	8	0
265	1.	Eye bolt for bolting two halves of gear case together.....	0	3	6
3063	5.	Nut for bolts, Nos. 310, 265, and 2859, $\frac{7}{8}$ " .....	0	1	10
3064	1.	Lock nut for bolts, No. 265, $\frac{7}{8}$ " .....	0	1	10
3070	5.	Split pin, $\frac{3}{16}$ " x $1\frac{1}{4}$ ", for No. 310.....	0	0	3
3065	4.	Lock washer for Nos. 9177 and 2859, $\frac{7}{8}$ " .....	0	0	6
3032	2.	Sheet iron half ring for fixing felt half wiper ring to gear case .....	0	0	3
3031	2.	Felt half wiper ring .....	0	0	9
3082	10.	Iron rivets for fastening half rings to gear case, $\frac{1}{8}$ " x $\frac{3}{4}$ " .....	0	1	0
9167	1.	M.I. gear case cover with spring and hinge complete, for Nos. 2862 and 9175 .....	0	3	3
3629	1.	M.I. gear case cover without spring or hinge .....	0	2	9
3630	1.	Hinge lug for cover .....	0	0	9
3631	1.	Spring for cover.....	0	2	3
3024	1.	W.I. hinge pin, $\frac{1}{4}$ " x $3\frac{1}{2}$ ".....	0	2	0
3632	2.	Bolt for fastening hinge lug to gear case, $\frac{1}{4}$ " x $\frac{7}{8}$ " .....	0	0	7
3838	2.	Nut for No. 3632 .....	0	0	5

Order by Style Number.

# The British Westinghouse Electric & Mfg. Co., Ltd.

This Company operates in the British Empire with the exception of Canada:  
and also in Norway and Sweden.

## Head Offices:

**LONDON:** Westinghouse Building, Norfolk Street, Strand, W.C.  
*Telegraphic and Cable Address:—"Multiphase, London." Telephone:—No. 3261 Gerrard.  
Codes used:—Westinghouse and Lieber.*

## Works:

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## Branch Offices:

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For South Africa:—

<b>JOHANNESBURG</b> . . . . .	<b>C. C. GEORGE &amp; CO.</b> , Box 1934.
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## Foreign Companies:

**WESTINGHOUSE ELECTRIC & MFG. CO.,  
PITTSBURG, PA., U.S.A.**

for North America, South America (except British and French Possessions),  
Cuba, Puerto Rico, Hawaiian Islands, Philippine Islands, China (except British  
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**CANADIAN WESTINGHOUSE CO., LIMITED,  
HAMILTON, ONT.,**  
for Canada.

**SOCIÉTÉ ANONYME WESTINGHOUSE,  
LE HAVRE, 2, Boulevard Sadi Carnot,**  
for France, Belgium, Spain, Portugal, Holland, Switzerland, Italy, their  
Colonies and Countries under their protectorate.

**WESTINGHOUSE COMPANY, LIMITED (Electric Department),  
ST. PETERSBURG.** Head Office: Nevsky Prospect No. 11,  
for the Russian Empire in Europe and Asia.

**WESTINGHOUSE ELECTRICITÄTS-ACTIENGESELLSCHAFT,  
BERLIN, W., 19, Jägerstrasse,**  
for Germany, Austria-Hungary (including Bosnia and Herzegovina), the Balkan  
States, Greece, Turkey in Europe and Turkey in Asia.