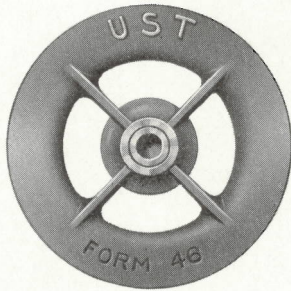
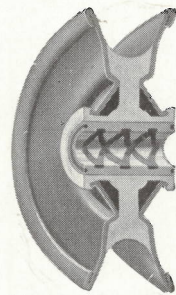




G-E TROLLEY WHEELS, HARPS, AND POLES



Union Standard Trolley Wheel



Ideal Trolley Wheel

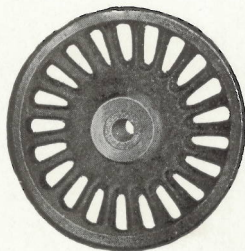
TROLLEY WHEELS

The trolley wheel, in itself a relatively insignificant casting machined to form, is after all as vitally important to the operation of a car as any other item of its equipment. Years of experiment have determined the material which best meets the peculiar combination of trolley wheel requirements. The trolley wheel must not be hard enough to wear the wire unduly, it must not be soft enough itself to wear out readily, and it must have maximum conductivity. Union standard trolley wheels are made of phosphor bronze, while the Ideal trolley wheel, as illustrated, is made with a forged copper center on either side of which steel flanges are pressed. These wheels are accurately machined insuring perfect balance and long life under severe service conditions.

The illustrations show sleet wheels designed to replace the standard wheel in icy weather, and scrapers which may be attached without removing the wheel, as they fit closely to the tread and are held in place by a suitable curved spring.

In city service where headway is short it is only necessary to equip one or two cars on each route in order to insure a good clean wire, but for longer headway, as in interurban service, it is advisable to equip all cars.

Both devices are made in two sizes suitable for city or high speed service, as shown by the table.



Union Standard Sleet Wheel



Union Standard Sleet Scraper

GENERAL ELECTRIC COMPANY
SCHENECTADY, N. Y.
Sales Offices in All Large Cities

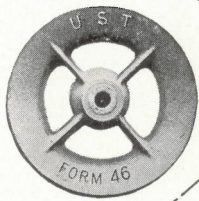


TROLLEY WHEELS

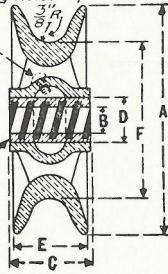
Dimensions and Data for Ordering

UNION STANDARD TROLLEY WHEELS, SLEET WHEELS, AND SLEET SCRAPERS

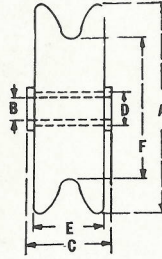
Note: Wheels Made Self-Oiling Only When Specified



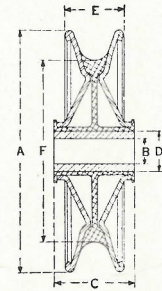
Graphite Bushing



Union Standard Trolley Wheel



Union Standard Sleet Wheel



Ideal Trolley Wheel

UNION STANDARD TROLLEY WHEELS							BUSHINGS FOR UNION STANDARD WHEELS				
Catalog No. of Wheel	Form No. of Wheel	DIMENSIONS IN INCHES			E Width of Flanges	Used with Following Harp Forms	Approx. Weight Lbs.	Cat. No. of Bushing	DIMENSIONS IN INCHES		
		A Outside Diameter	B Size Bore	C Length through Hub					Pin Diameter	Outside Diameter	Length
600935	5	4 1/4	1 1/2	1 1/2	1 3/8	6-25	2	600955	1 1/2	7/8	1 1/2
600936	6	4 1/4	1 1/2	1 1/2	1 3/8	6-25	2	600955	1 1/2	7/8	1 1/2
600513	31	4 1/4	1 1/2	1 1/2	1 3/8	6-25	2 1/4	600955	1 1/2	7/8	1 1/2
600937	21	5 3/4	1 1/2	3	1 1/2	21	3 1/2	600954	1 1/2	7/8	3
600938	32	4 1/4	5/8	1 1/2	1 3/8	26	2 1/4	600952	1 1/2	1 1/8	1 1/2
600890	33	4 1/2	1 1/2	1 1/2	1 3/8	6-25	2 3/4	600955	1 1/2	7/8	1 1/2
600939	34	4 1/2	5/8	1 1/2	1 3/8	26	2 1/2	600952	1 1/2	1 1/8	1 1/2
600940	36	5	1 1/2	1 1/2	1 3/8	25	2 3/4	600955	1 1/2	7/8	1 1/2
600941	37	5	5/8	1 1/2	1 3/8	26	2 1/2	600952	1 1/2	1 1/8	1 1/2
600942	38	5	5/8	2	1 3/8	12-A & 30	3	600953	1 1/2	1 1/8	2
600944	41	5 1/2	1 1/2	1 1/2	1 3/8	15-A & 28	3	600955	1 1/2	7/8	1 1/2
600945	42	5 1/2	5/8	1 1/2	1 3/8	15-B & 29	3	600952	1 1/2	1 1/8	1 1/2
600946	43	5 1/2	5/8	2	1 3/8	12-A & 30	3 1/4	600953	1 1/2	1 1/8	2
600947	46	6	1 1/2	1 1/2	1 3/8	15-A & 28	3 1/2	600955	1 1/2	7/8	1 1/2
600948	47	6	5/8	1 1/2	1 3/8	29 & 15-B	3 3/4	600952	1 1/2	1 1/8	1 1/2
600554	48	6	5/8	2	1 3/8	12-A & 30	3 1/2	600953	1 1/2	1 1/8	2
600949	49	6	1 1/2	3	1 3/8	21	3 3/4	600954	1 1/2	7/8	3
601181	61	5	3/4	1 1/2	1 3/8	33	3	601169	3/4	1 1/4	1 1/2
601182	63	6	3/4	1 1/2	1 3/8	34	3 3/4	601169	3/4	1 1/4	1 1/2
600931	1	5 3/4	5/8	1 1/2	1 3/8	29 & 15-B	3 1/2	600952	1 1/2	1 1/8	1 1/2
600932	2	5 3/4	5/8	2	1 3/8	30 & 12-A	3 5/8	600953	1 1/2	1 1/8	2
600933	3	5 3/4	1 1/2	3	1 3/8	21	4	600954	1 1/2	7/8	3
600934	4	4	1 1/2	1 1/2	1 3/8	6 & 25	1 1/2	600955	1 1/2	7/8	1 1/2
600828	Standard Sleet Scraper for 4-in. Wheel.										
600831	Standard Sleet Scraper for 6-in. Wheel.										
601004	Sleet Scraper Springs.										

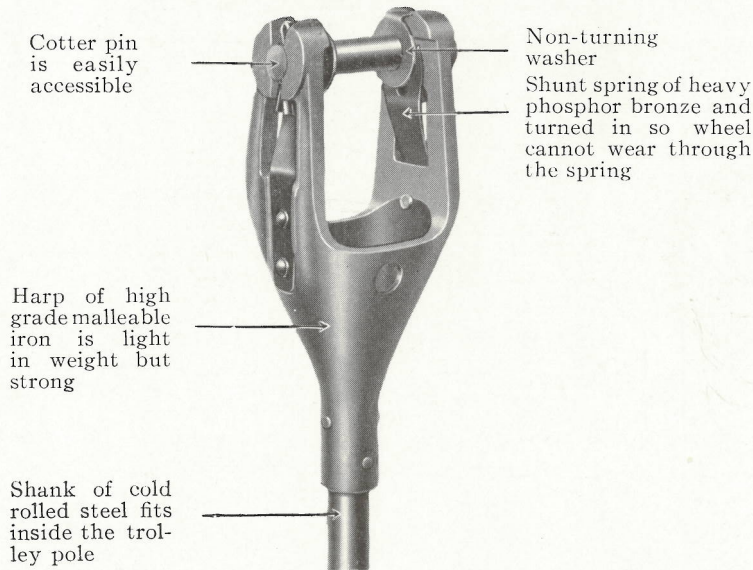
*IDEAL TROLLEY WHEELS

IDEAL TROLLEY WHEELS								BUSHINGS FOR IDEAL WHEELS			
Cat. No. of Wheel	Form No. of Wheel	Suitable For Harp Form No.	Net Wt. in Lb. (Approx.)	DIMENSIONS IN INCHES				Cat. No. of Bushing	DIMENSIONS IN INCHES		
				A	B	C	E		Pin Diam.	Outside Diam.	Length
600745	40-A	6-A, 19, 25	2 1/4	4 1/2	1 1/2	1 1/2	1 1/2	600955	1 1/2	7/8	1 1/2
600943	40-B	26	2 1/8	4 1/2	1 1/2	1 1/2	1 1/2	600952	3/8	1	1 1/2
600950	60-A	15-B, 29	3 1/8	6	1 1/2	1 1/2	1 29/64	600952	3/8	1	1 1/2
600746	60-B	12-A, 30	3 1/4	6	1 1/2	2	1 29/64	600958	3/8	1	2

*Ideal trolley wheels are put up in standard cartons of 12, 26 and 51.



TROLLEY HARPS



Union Standard Trolley Harps are made of malleable iron. Experience has proved that trolley harps made of malleable iron are best adapted to strenuous overhead service because they are strong enough to withstand shocks caused by wheels leaving the wires. Heavy harps place a severe burden on the springs in the trolley base and make the spring action sluggish, but malleable iron harps, because of their light weight, do not retard the function of the springs. Furthermore, there are no sharp corners or projections to catch and tear down overhead. The features of these harps are:

- 1. Non-turning Washer**—A lip on the edge of the washer fits down into a slot in the harp and locks the contact-washer in place.
- 2. Phosphor Bronze Shunt Springs**—The shunt springs are turned into a slot and riveted to the outside of the harp. The shunt springs do not come in contact with the wheel and consequently there is no friction wear.
- 3. Axle Pin**—The axle pin is case hardened. The cotter pin which holds it in place is easily accessible and may be removed on the job quickly and without difficulty.

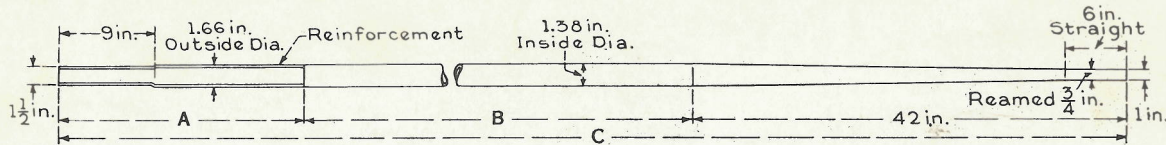
Catalog Number	Form	DIMENSIONS IN INCHES			Used with Wheels Form Nos.	Approx. Weight	PARTS FOR TROLLEY HARPS				
		Width Between Washers	Diam. Axle Pin	Max. Diam. Wheel			Contact Spring Cat. No.	Contact Washer Cat. No.	Axle Pin		
									Cat. No.	Diam. in Inches	Length in Inches
600961	6-A	1 1/2	1 1/2	4 1/2	4-6-31-33-40-A	3	600989	600758	600973	1 1/2	2 5/8
600962	12-A	2	5/8	6	2-38-43-48-60-B	3 1/2	600990	600999	600974	5/8	3 1/4
600964	15-A	1 1/2	1 1/2	6	41-46	3 3/4	600992	600758	600976	1 1/2	2 15/16
600965	15-B	1 1/2	5/8	6	1-42-47-60-A	3 3/4	600993	600999	600977	5/8	2 15/16
600966	19	1 1/2	1 1/2	5 1/2	6-31-33-36-40-A	3 1/4	600989	600758	600978	1 1/2	2 3/4
600967	21-A	3	1 1/2	6	3-49	4 1/4	600989	600758	600979	1 1/2	4 3/16
600743	25	1 1/2	1 1/2	5	6-31-23-36-40-A	2 3/4	600996	601001	600982	1 1/2	2 3/4
600970	26	1 1/2	5/8	5	32-34-37-40-B	2 3/4	600996	601002	600983	5/8	2 3/4
600971	28	1 1/2	1 1/2	6	41-46	3	600997	601001	600984	1 1/2	2 13/16
600972	29	1 1/2	5/8	6	1-42-47-60-A	3	600997	601002	600985	5/8	2 13/16
600744	30	2	5/8	6	2-38-43-48-60-B	3 1/4	600997	601002	600986	5/8	3 3/8
601167	33	1 1/2	3/4	5	61	2 3/4	601184	601185	601183	3/4	3 1/4
601168	34	1 1/2	3/4	6	63	3	601184	601185	601183	3/4	3 1/4

*NOTE.—Catalog Number includes harp, complete, with contact springs, washers, axle pin and spring cotters.

Union Standard Trolley Harps may be supplied with steel shanks to rivet inside the pole, or the harp casting may be bored out to slip over the end of the pole.



TROLLEY POLES



Butt-weld Trolley Pole Construction (See Table Below for Details)

A good trolley pole must render long service under strenuous conditions. It must be strong enough to transmit the pressure of the springs and hold the wheel firmly against the wire; it must be strong enough to withstand the blows it receives from overhead structures; it must be rigid at the base to prevent bending at the pole socket; still it must be flexible, so that it will follow variations in wire height, and so that it will give, without taking permanent set, when overhead structures are extremely low; and it must be light in weight so that it will not hamper the action of the base springs.

The Union Standard Trolley Pole is constructed to meet all these service requirements. This pole is made of high-grade, close-grained, butt-welded or seamless tubing, reinforced from the base up with tubing which is inserted hot and rolled. All poles are then heat-treated and the result of this construction and treatment is a light, strong pole which will take severe deflection without permanent set, and which will stand up under the shocks and blows from the overhead work.

HEAT-TREATED UNION STANDARD TROLLEY POLES, BUTT-WELD TYPE 1 1/2" Diameter

Catalog No.	Length	A	B	Weight in Pounds
601528	11'-0"	20"	5'-10"	23 1/2
601529	11'-4"	20"	6'-2"	24
601530	12'-0"	22"	6'-8"	26
601531	12'-4"	22"	7'-0"	26 1/2
601532	13'-0"	22"	7'-8"	28 1/2
601533	13'-4"	24"	7'-10"	29
601534	14'-0"	24"	8'-6"	31
601535	14'-4"	24"	8'-10"	31 1/2
601536	15'-0"	24"	9'-6"	33 1/2
601537	15'-4"	24"	9'-10"	34
601538	16'-0"	24"	10'-6"	37
601539	16'-4"	24"	10'-10"	38
601540	17'-0"	24"	11'-6"	40
601541	18'-0"	24"	12'-6"	43

HEAT-TREATED UNION STANDARD TROLLEY POLES, SEAMLESS TYPE

Length	1 1/2 IN. DIAMETER		2 IN. DIAMETER	
	Catalog No.	Weight in Pounds (Approx.)	Catalog No.	Weight in Pounds (Approx.)
11'-4"	601015	17 1/2	601170	22 1/2
12'-0"	601016	18 1/2	601171	24
12'-4"	601017	19 1/2	601172	24 1/2
13'-0"	601018	20	601173	26
13'-4"	601019	20 1/2	601174	27
14'-0"	601020	21 1/2	601175	28 1/2
14'-4"	601021	22	601176	29 1/2
15'-0"	601022	25 1/2	601177	31
15'-4"	.....	.....	601178	32
16'-0"	.....	.....	601179	33 1/2
16'-4"	.....	.....	601180	35

STANDARD EQUIPMENTS

Description	Cat. No. of Equipment	Ship. Wt. in Lb. (Approx.)	Description	Cat. No. of Equipment	Ship. Wt. in Lb. (Approx.)
12 ft. 4 in. heat-treated pole, Cat. No. 601531, with Form 25 harp, Cat. No. 600743, and Form 31 wheel, Cat. No. 600513.	601547	31 1/2	12 ft. 4 in. heat-treated pole, Cat. No. 601531, with Form 30 harp, Cat. No. 600744, and Form 48 wheel, Cat. No. 600554.	601553	33 1/4

The above pole equipments are General Electric standards and are furnished on all original equipment orders. The equipment, Cat. No. 601547, has a 4 1/4-in. wheel and is recommended for light city service and safety cars. Equipment, Cat. No. 601553, made up with a 6-in. wheel, should be recommended for high speed and heavy city and interurban service.

IMPORTANT.—When ordering pole equipments, care should be taken to state whether the specified length is that of the pole alone or of the pole and its equipment. The length of a pole equipment is the distance from the butt end of the pole to the center of the wheel.