

DUNLITE

SUPPLY EVERYTHING ELECTRICAL
FOR THE COUNTRY HOME

DUNLITE WIND AND ENGINE DRIVEN LIGHTING PLANTS

HOME APPLIANCES include

Washing Machines
Vacuum Cleaners
Food Mixers
Liquidisers
Sewing Machine Motors
Floor Polishers
Irons
Toasters
Kettles
Refrigerators

WORKSHOP APPLIANCES include

Electric Drills
Electric Grinders
Electric Saws
Electric Welders
Electric Soldering Irons
Electric Pumping Units
Battery Chargers

BATTERIES

CABLES AND FITTINGS

DUNLITE ELECTRICAL CO. LTD.

TAVISTOCK STREET ADELAIDE

STH. AUSTRALIA

L. J. Furlong, Printer, 128 Payneham Road, St. Peters.

DUNLITE

Wind Lighting Plant

Instruction Book

12-volt & 32-volt 750 watt Plants

For the Installation and Maintenance
of DUNLITE Wind-driven
Lighting Plants.

DUNLITE ELECTRICAL CO. LTD.

TAVISTOCK STREET,

ADELAIDE, S.A.

A Personal Message

It is our sincere desire that you obtain from your Plant the service, comfort, enjoyment, and numerous years of long life and trouble-free service that we have earnestly endeavoured to build into it. Please read the instructions carefully.

It is necessary only that you treat the Plant with reasonable care and consideration, in order that you and your family or friends may realise these qualities.

In this book we have endeavoured to give much valuable information, without going into intricate details, that you should have in order to give your Plant the careful attention which it merits.

For extensive repairs or adjustments, we recommend and ask that you get in touch with an authorised DUNLITE Dealer or Distributor, who will give the particular attention of an organisation devoted to your interests, with mechanics specially trained in maintenance.

We have a complete range of 32-volt appliances, such as washing machines, irons, fans, radios, electric motors, etc., and are always at your service for advice on any electrical matter.

Communications with reference to your Plant should give the serial number of generator and voltage of batteries.

DUNLITE ELECTRICAL CO. LTD.

TAVISTOCK STREET, ADELAIDE — — — Phone W 1368
SOUTH AUSTRALIA

IMPORTANT

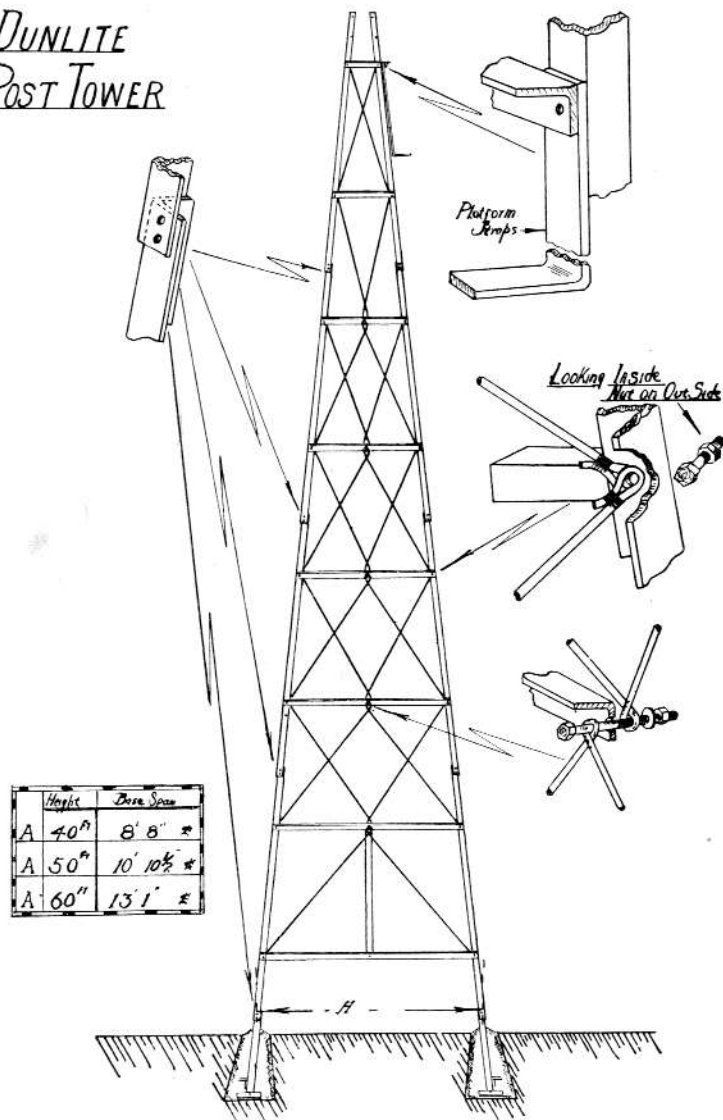
Location of Plant

Examine the proposed site to make sure that the Plant will receive the maximum force of the prevailing winds.

Most of the criticism to the unsatisfactory operation of a wind-driven Plant is due to Plants being installed in unsuitable positions or on low towers. No plant will work unless it is in a clear air-stream, and, if a person is not prepared to have a tower of suitable height, it is better not to instal the Plant. Remember, the plant generates electricity free from the wind, therefore be certain that the Plant clears all obstacles (house roof, trees, etc.) by at least 15-20 feet. Make sure that the Plant is between the house and the direction of the prevailing winds as the roof will cause an upsweep of wind. Any object higher than the plant will cause a disturbance for 300 yards if in front of plant, and 50-100 yards if behind the plant. In hilly districts, it is better to put the Plant 200-300 yards away from the house and batteries if a good wind position can be obtained. **Forty feet is the minimum height of tower recommended**, as the air close to the ground is disturbed, and the charging rate is much steadier and less strain thrown on the plant when up in the clear air-stream.

Where the Plant has to be set amongst trees, a 50-60 ft. tower is well worth the difference in price, as a much greater and steadier charging rate is obtained and less strain put on the plant.

DUNLITE 3 Post Tower



TOWERS

You would not think of erecting a windmill on a wooden pole, with dangerous and unsightly guy wires all around it. How much more thought and care should be taken then with a Lighting Plant, which is an asset, and will not detract any value from the appearance of the finest home?

DUNLITE Plants are designed and manufactured to fit upon steel towers.

You would not use black iron to roof your house, so why use a black or painted steel tower for your DUNLITE Plant? Galvanizing is the only effective means of rust prevention, and whereas the initial cost is slightly higher, that rise is more than compensated by this permanency, thus saving cost of repainting or the unsightly appearance of a rusty tower.

Our standard installation is designed to fit upon a DUNLITE three-post Galvanized Steel Tower. If desired, a four-post tower cap can be supplied for fitting the Plant upon a four-legged tower.

INSTRUCTIONS FOR ERECTING 40-FT. DUNLITE THREE-POST TOWER

Open all the bundles of tower and proceed to lay out one side on the ground. All the legs are identical, but the ends with the corners ground off are always fitted towards the top. Undo the bundles of wire braces and sort into lengths.

Commence assembling from the bottom. Take the longest girt and one of the three longest braces and bolt to the tower legs with the bend in the brace pointing upwards and forming a crossed loop at top. **This is most important** as an open loop will not tension tower correctly. The brace is bolted inside the tower leg and the girt outside.

Next take size smaller girt and brace and bolt in a similar manner on next two holes on the leg, the crossed loop again pointing upwards.

Join on two more tower legs and bolt on the third girt. In this case it will be found that there are six braces of equal length in the bundle, therefore two braces are bolted under each bolt, one facing upwards, and one downwards to meet the centre loop of No. 1 wire brace at centre of No. 2 girt.

When bolting these together, use an inch and a half bolt and bolt the bottom brace on the outside of the girt through centre hole, and the top brace on the inside, with the washer between this latter brace and the nut. All braces must be looped around the centre bolt and not just passed over it.

The fourth and fifth girts are assembled identically to the third. There will be only three wires in the bundle for the sixth girt. One of these is fitted, and the loop at centre bolt faces downwards to meet the brace from the fourth girt.

Similarly, the seventh girt has only three wires in the bundle, and again one of these is fitted facing downwards. However, there are six single wires left, and one of these is bolted under each bolt of the seventh girt facing upwards. These are crossed over and bolted on to the eighth girt.

The other two sides are assembled on to the first side and in a similar manner.

While assembling the tower, do not tighten any of the bolts further than a full nut. When the tower is completely assembled, always tighten centre bolts first, and then the ones on the legs. The ladder sections can then be assembled, the small section bolting on to the eighth girt, and the others bolting down the tower.

Supplied with the Plant are three pieces of 1 in. x $\frac{1}{4}$ in. flat mild steel with a right angle bend. These are bolted hanging downwards under alternate bolts on the top girt, and are used for supporting the platform. Also, there are two pieces of 5 ft. galvanized angle with the tower. These are bolted between the centres of the first and second girts on the two sides opposite to the ladder.

The anchor plates are then bolted to the anchor posts and holes dug so that the bolts to tower legs are just above ground level.

The tower can then be raised by tractor or suitable winch and bolted to anchor posts, care being taken to see that it is carefully guyed during this process. Guy ropes should be left in position until concrete has hardened.

NOTE.—These anchors are for concrete only and the holes should be made larger at the bottom than the top and completely filled with concrete after the tower is levelled.

Similar instructions apply to 50 and 60 ft. towers—the method of assembly, centre girts being identical to girts 3, 4, and 5.

It is recommended that the services of a qualified windmill man be obtained, if possible, for this work, as the tower will be weakened if not correctly assembled.

PROPELLERS

TWO-BLADE TYPE

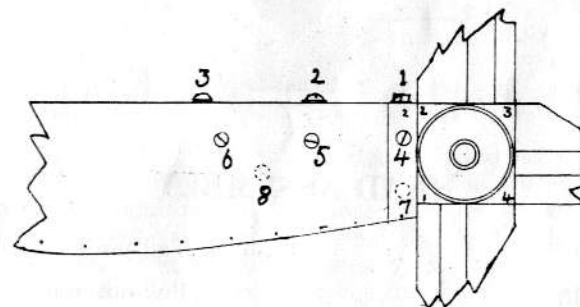
This is sent from the factory in one piece, and it is only necessary to fit to the hub.

Fit bolts through front cover plate and propeller and mount on hub after the generator is fitted to head assembly, placing the nuts and spring washers at back of hub. Tighten bolts evenly and check these periodically as the wood may shrink with age.

Note.—Flat face of propeller is nearest generator.

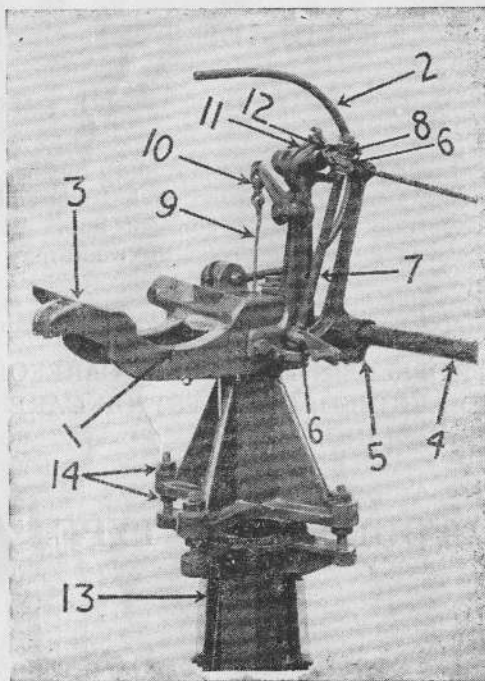
THIS PROPELLER HAS BEEN CAREFULLY BALANCED AND ALIGNED; GREATEST OF CARE MUST BE TAKEN IN HANDLING.

FOUR-BLADE TYPE



All four blades are stamped with a number near the centre, and the arms of the hub are also numbered. Slide No. 1 blade on the corresponding arm of the hub until the screw holes are properly in line. Then start screws, Nos. 1, 2, 3 (see sketch above), and tighten these three screws right up tight. This draws the blade tight against the hub, and allows the remaining screws to be put in easily. This procedure is very important, as it is similar to that used in the manufacture of the blades. Proceed to fix the other blades in a similar fashion, and make sure that all screws are dead tight.

Failure to follow above directions will throw propeller out of balance.



HEAD ASSEMBLY

- | | |
|--|---|
| 1. Cradle. | 8. Tail pin lock screws. |
| 2. U-bolt. | 9. Pull-out rod. |
| 3. Locating slots for generator studs. | 10. Swivel. |
| 4. Tail bone. | 11. Bell crank. |
| 5. Tail bone clamp. | 12. Furling chain. |
| 6. Graphite pivoting brushes. | 13. Tower cap. |
| 7. Tail pin. | 14. Head assembling leveling and lock nuts. |

Installation Instructions

ERECTION OF TOWER

Full instructions are provided with tower, and these should be strictly adhered to when building up tower.

When using the Dunlite type of tower, care must be exercised that the three straps used for supporting the platform, and are supplied with the Plant, are placed in position between the leg of the tower and the top girth. Also, brace wires should be bound with thin wire or insulation tape to prevent vibration in strong winds.

TOWER CAP

This provides a means of levelling the Plant, irrespective of the angle of the tower. It is usually fitted before the tower is erected.

HEAD ASSEMBLY

Remove top nuts from the four studs on tower cap. Place head assembly on these four studs with the G and G+ terminals in the most convenient positions for running the wires down tower.

LEVELLING HEAD ASSEMBLY

This is done by fitting generator to head assembly (see Fitting Generator Instructions, Page 9). The head assembly is mounted on sensitive ball bearings, and should the base of head assembly not be level, the generator will swing to side which is lowest. The level is adjusted by moving the lock nuts, both upper and lower, on tower cap until the generator will remain in any position. When the correct position is attained, tighten all nuts **SECURELY**.

TAIL

The tail bone is sent from the factory fitted with suspension bar and pivot bracket. It will be necessary to assemble tail wings and angles and to bolt them to tail bone.

The angle irons of tail are placed across the tail wings with the flat side of angle iron out, and are then bolted with $\frac{1}{4}$ -inch galvanized bolts, after placing a galvanized washer between the wing and angle iron on each bolt. These washers prevent the wings from vibrating against angle irons.

Bolt the assembled tail wings to the tail bone by means of the small U-bolts; setting the tail as far back along the bone as possible. The tail is then fixed to the head assembly by means of the tail pin, and the **tail pin lock screws are then securely tightened.** Furling chain is then hooked to the bell crank, care being taken that the chain lies flat and is not twisted.

FURLING WIRE

The furling wire is the only means of switching the plant out of the wind. Therefore, make sure that a good heavy wire (No. 8 gauge) is used and securely fastened to the swivel on the end of the pull-out rod. If this is not available, use two strands of lighter wire. This is most important as, should the wire break in a heavy wind, the batteries will be over-charged. Should the wire break in a heavy wind, lights should be switched on to overcome this. On no account attempt to disconnect batteries with Plant running at any time.

CONNECTING UP

The wiring from the Plant to the batteries should be carried out with 7/.036 wire.

The positive lead is taken from the lug on the end of the wire coming from the pick-up on the head assembly. A cross arm to take the leads to the battery room should be fitted about 25 feet up the tower, and the positive lead brought down using insulators so that the lead does not fray against the tower.

The negative lead is connected to terminal on the side of the head assembly base (near positive connection—see illustration, Page 9), and also run down the leg to another insulator on the cross arm.

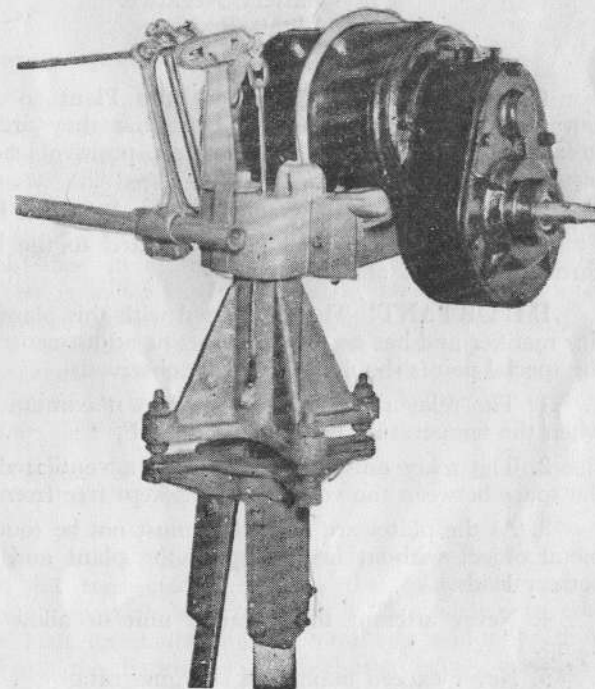
The two wires are then run across to the battery room, and suitably fixed and insulated, and the leads then run to the Relay.

FITTING GENERATOR

32 VOLT GEARED

Sit generator in the cradle so that the gear box hangs at about a 5 o'clock position. (About 2 inches from vertical away from head assembly.) The pole block set screws on the generator should be made to engage in the locating slots in the head assembly (see Page 6). This prevents any movement of the generator should the U-bolt be loose. Do not forget the plain washer and spring washer before the nut on the U-bolt. **Tighten securely.**

The lead wire from the generator is connected to the terminal under the cradle. **Take care that this lead does not foul the tail in the furled position.**



Plants are sent from the factory with the gear boxes filled with suitable oil. This oil is suitable for 4-5 years' running. When replacing or renewing oil, use Shell Retinax Light or similar grade gear oil.

12-VOLT GENERATOR

This is fitted to cradle with serial number on top at drive end, so that the end plate flanges fit inside the raised supports on the end of the cradle. This prevents the generator moving backwards or forwards.

Connect up in a similar manner to the 32-volt Plant. (Refer Page 8.)

RELAY

Several types of Relays are employed, but in each case the connections are plainly marked.

ABBREVIATIONS used on Relays are as under:—

- G+ Generator Positive.
- G— Generator Negative.
- B+ Battery Positive.
- B— Battery Negative.
- L+ Lights Positive.
- L— Lights Negative.

Connect the two wires from the Plant to the generator terminals of the Relay, **taking care that they are not reversed in any way** (that is, do not connect positive lead to negative terminal).

The batteries are connected to the B+ and B— terminals.

The house lights should be connected to the load terminals through a switch and fuse.

IMPORTANT! The relay used with this plant is a selenium dry rectifier and has no moving parts or adjustments. The following special points should be carefully observed:—

1. The relay should not be used at maximum charging rate when the temperature is above 108 deg. F.
2. The relay must be mounted in a ventilated position and the space between the ventilating fins kept free from cobwebs, etc.
3. As the plates are alive they must not be touched with any metal object without first stopping the plant and removing the battery leads.
4. **Never attempt to dismantle unit** or allow it to become damp.
5. Never exceed maximum charging rate.

The selenium rectifier will give long, trouble-free service if the above points are adhered to and is free of all mechanical and electrical interference.

Before letting the Plant into the wind, check all wiring and connections.

Installing Plant where there is an Existing Installation

When a DUNLITE Plant is installed where there is an existing engine-driven unit, great care must be taken to see that there is no earth in the wiring or engine. This is most important as the Tower of the DUNLITE Plant is connected to the negative of the generator. Should a positive wire of the installation be touching any earth metal, there will be a leakage of current through the ground to the tower. This will cause the batteries to keep running down and will eventually corrode away the legs of the tower. It can also cause relay trouble and depolarize the generator.

To test for this proceed as follows:—

After the plant is erected and the relay mounted, connect the battery positive and negative wires to the relay, but not the wires from the generator. Then, with a voltmeter test between battery positive and generator negative wire, and also battery negative and generator negative wire. If the system is in good order, no reading will be obtained in either case. If a reading is seen in the first test it will mean an earth in the negative side of the installation and will not cause damage. However, if a reading is obtained from the battery negative to the generator negative, it will indicate an earth on the positive side and must be located and removed before connecting the Plant.

If no voltmeter is available, a low wattage lamp could be used.

Where there is an existing Plant, the relay battery terminals should be connected direct to the battery terminals and not through existing switch-board. No wiring is connected to the load terminals and the ammeter will only show charging current, the lighting load discharge being shown on the existing ammeter.

The engine and wind plant can be run either independently or together, but, the latter is not recommended, as the charging rate to the battery would be too high.

Operation and Maintenance

FURLING LEVER

Release propeller into the wind by allowing the lever to rise SLOWLY. The generator will then commence to charge the batteries, in accordance with the wind pressure. The charge rate is read on the ammeter, situated above cutout.

Leave the plant operating until the batteries are fully charged, then stop plant by pulling down the furling lever, and by securing same with pin.

TO TEST BATTERIES

Use hydrometer supplied. Unscrew caps from batteries, insert the hydrometer, squeeze the bulb, and then, by releasing slowly, the Electrolyte will rise in the glass tube and the float will rise in the Electrolyte.

Read at the Electrolyte level. The Specific Gravity of a fully charged battery is 12.50 (Yellow); 12.00 (Blue), half charged; and 11.50 (Red), discharged.

TO ADJUST CHARGING RATE

This is controlled solely by the tail, and is varied by moving the top tail suspension lever in the slot. Move away from generator to increase the charge rate. This should be set in accordance with the type of batteries used. See recommendation of charging rate from battery manufacturer. Tighten tail pin set screws after adjusting.

GREASING

The Plant is equipped throughout with grease-packed ball and roller races, and requires no attention for a period of 4-5 years. They should then be taken down, old grease washed out, and re-packed with Mobilgrease No. 5, supplies of which can be obtained from your nearest DUNLITE Distributor.

The tail is swung upon Graphite lubricated bushes, which require no lubrication.

For geared Plants, see Page 9.

GENERAL MAINTENANCE

BRUSHES.

These should be inspected periodically (about every 6 months) and replaced when worn to about $\frac{1}{2}$ inch in length. To change brushes, loosen the screw fixing the brush to holder, slide old brush out and new one into position, and tighten screw.

When inspecting brushes, check brush holders for freeness and tension. When brush is lifted $\frac{1}{2}$ -inch from face of commutator and let go it should go back with a sharp click. Correct brush pressure (measure on brush face) is 6 ozs.

When renewing always use genuine Dunlite brushes.

COMMUTATOR.

This is made from hard drawn copper bar and, provided that the rest of the system is kept in order, should only need refacing at every complete generator overhaul. After any refacing the mica must be undercut .030 inches.

When in use the commutator will develop a dark glaze finish. This is beneficial to the brush life and should not be removed.

Should the commutator show signs of burning or flat spots it would be due to the following:—

(a) Excessive Charging Rate.

If the plant exceeds the rated output of 20 amps, the governing should be adjusted immediately (refer Page 12).

(b) Brushes Worn Out.

The brush holders are fitted with stops that prevent them from damaging the commutator when the brush is worn out. Thus, when the brush is worn out, it will be off the commutator and will cause considerable arcing. This will be noticed by the ammeter needle fluctuating when the plant is charging.

(c) Faulty Battery Connections.

These allow the voltage to vary and, if allowed to be unchecked, will cause blown globes or even exploded batteries. Check all connections periodically by feeling each one after the plant has been charging for an hour or so. If any feel warm, it indicates a bad connection and the lugs should be removed and thoroughly cleaned. Make sure plant is turned off before doing this.

(d) Faulty Brushes.

Certain types of carbon will cause rapid commutator wear, whilst others will cause burning. Be sure genuine factory approved brushes are fitted.

BEARINGS.

We recommend dismantling the generator every four-five years. The bearings and housings should be carefully washed out with clean petrol and the bearings repacked with a good quality bearing grease. (Mobilgrease No. 5.)

When the propeller is tightened, no end play should be in the generator or lay shaft. Should end play develop, immediate steps should be taken to dismantle generator and find the cause, otherwise the shaft may wear and cause extensive damages to gears and windings.

WINDINGS.

Windings are very heavy and with a big safety factor. Should an armature burn out, the fault will be due to excessive charging rate. After repairing, check governing carefully. Should the field coils burn out, it will be due to the generator running on open circuit. This could be due to any of the following:—

- (a) Broken wiring.
- (b) Collector brush worn out.
- (c) Battery charger not properly used (read instructions carefully).
- (d) Faulty relay.
- (e) Faulty battery connections.

RADIO INTERFERENCE SUPPRESSOR.

This is fitted on the brush plate and connect to the positive brush holder. Should a fault develop in this, it can short the generator and sometimes cause damage to the relay. If this is suspected of causing trouble, it can be disconnected from the brush holder.

GENERATOR POLARITY.

As these generators are cumulative compound wound, any attempt to make them run as a motor without disconnecting the series field will cause them to depolarize. This means that, although generator still appears to be generating, the positive and negative terminals have reversed and the relay (which is a polarized unit) will not operate.

HOW TO REPOLARIZE GENERATOR.

Connect relay in ordinary manner and then remove the cover band from the generator and place a piece of paper or rag under the brushes so that they do not touch the commutator. Then, with a screwdriver, bridge the generator positive and load positive terminals on the relay. A slight flash will occur and should show about 1 to 2 amps discharge on the ammeter. Hold the screwdriver across the terminals for about 2 seconds, then the paper can be removed from under the brushes and the cover band refitted. The generator should then charge in the correct polarity.

CAUSES OF DEPOLARIZATION.

A generator can become depolarized through any of the following:—

- (a) Faulty relay holding in and allowing the battery current to run back into generator.
- (b) Attempts to motor generator.
- (c) Leads from battery charger allowed to touch main battery terminals.
- (d) Short-circuit in wiring from generator to relay.

FINALLY.

ALWAYS see that propeller is fitted correctly and the nut as TIGHT as possible. This should be checked after a few weeks' running as they are subject to severe pressure and should they be allowed to slacken will cause damage to the bearings and shaft.

FAULT TESTING

TO TEST PLANT WITHOUT USING TEST METERS IF PLANT WILL NOT CHARGE.

1. (a) Check all wiring and see that all connections are correct, clean, and tight.
(b) Check battery terminals for corrosion and loose connections.
(c) If a battery charger is fitted, see that the switch is in normal position.
2. If the above all appear in good condition, remove the cover from the relay terminals, allow the plant to run in the wind, and, with a piece of wire, short the generator positive and negative terminals on the relay. If a flash occurs, it indicates that the generator is charging and the fault is either that (a) the generator is depolarized, or (b) the relay is at fault.
 - (a) To test for depolarization reverse the generator positive and negative leads on the relay and allow the plant to run in the wind. If it now charges O.K., reconnect wires in original position and repolarize generator. (See instructions, Page 15.)
 - (b) If the plant will not charge after reversing the leads, the fault will probably be in the relay. A fuse link is fitted at the back of some units and this should be examined. If this is blown it would indicate that (a) the charging rate is too high, or (b) there is a short circuit in the wiring to the generator. (See instructions on relays.)

3. If no flash occurs in test 2, it would appear that no current is coming from the generator, so proceed as follows:—

Remove generator cover and see that brushes are not worn out and are seating correctly on the commutator and that all leads appear in order. Clean commutator with fine sand paper. Check collector brush on head assembly. Then test plant as outlined in Paragraph 2. If still no flash is seen, switch plant out of wind and lift negative (earth) brush from commutator and pack a piece of paper or cardboard under it to prevent it touching the commutator. Then take a small piece of wire and join the load positive and generator positive terminals on the relay and note results.

- (a) If no flash occurs or no discharge shows on the meter it would indicate a faulty connection in the wiring of generator. Check this by carefully examining all wiring, joints, and collector brush. If all these are in order, the fault is probably in the fields and the generator will need dismantling.
- (b) If a slight flash occurs and a discharge of 1 amp ($\frac{1}{2}$ amp on 12-volt plants) shows, it will indicate the wiring and field coils are in order and the trouble probably in armature of generator.
- (c) If a large flash occurs and heavy discharge shows, it would indicate a short circuit in wiring of generator. This can be ascertained by disconnecting generator lead at main generator terminal and testing again. If all wiring shows clear with generator disconnected, try disconnecting radio interference suppressor from positive brush holder, re-connect generator lead and test again. If heavy discharge still shows, it will indicate break-down in generator.

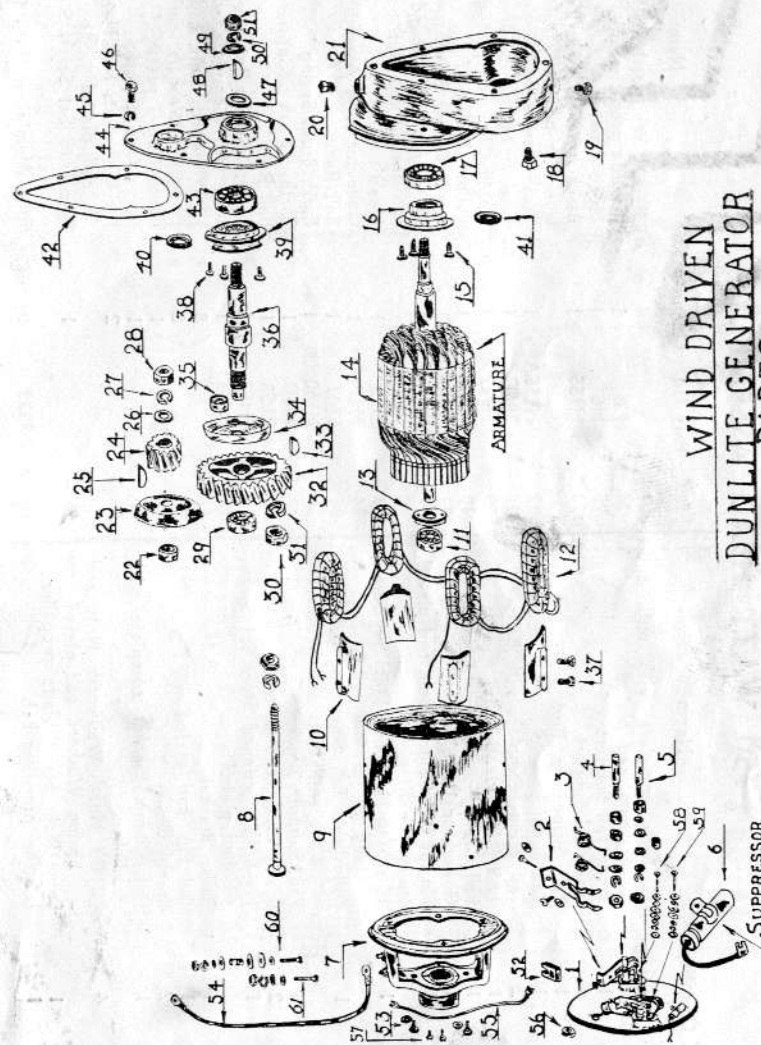
SPECIAL NOTE.

Dunlite wind-driven generators are all compound wound and will not run as a motor. **Therefore on no account attempt to do this,** otherwise considerable damage will be done to relay and generator.

The repairs to generators and relays should only be undertaken by a skilled electrician and in accordance with the data supplied by this Company.

750 WATT WIND-DRIVEN DUNLITE GENERATOR

Ref.	Part No.	Quantity	Name	Ref.	Part No.	Quantity	Name
1	D1	1	Brush Plate 750W.	34	G1A	1	Oil Throw
2	284	2	Brush Holder Cad Plate	35	G274/A	1	Spacing Ferrule
3	285	2	Brush Springs Left and Right Hand Cad Plate	36	G127	8	Layshaft
4	L123	1	Brush pin complete	37			Pole Block bolts 1" x 3/16 Hex Head Whitworth
5	S123	1	Brush pin complete	38		3	Grease Retainer 3/16 CSK Steel screws
6		1	Suppressor Condenser	39	G4	1	Grease Retainer
7	D2	1	Com. End Plate	40	282A	1	Felt Washer for Grease retainer for G4
8	289	2	Body bolts with washers and nuts	41	282B	1	Felt Washer for Grease retainer for D5M
9	G132	1	Medium Body	42	307	1	Gear Box Gasket
10	D6	1	Pole Blocks	43	6206	1	Ball Bearing Front Gear Box
11	6204	4	Ball Bearing Com End	44	G2	1	Gear Box Lid
12	D4L	4	Field Coils	45		6	5/16 Spring Washer
13		1	Grease Retainer	46		6	Gear Box lid bolts 1" x 5/16
14		1	Armature complete 750 watt 3/16 x 3/16 Counter Sunk Head Metal threads steel	47	283	1	Special Washer
15		3	Grease Retainer	48		1	Woodruff Key 1/4 thick
16	DSM	1	Ball Bearing Drive End	49		1	Plain Washer 3/4 ID
17	6205	1	Oil Level Plug 3/4 x 3/8 Hex Head Set Screw	50		1	Spring Washer 3/4 ID
18		1	Oil Drain Plug 3/4 x 3/8 Hex Head Set Screw	51		1	Hex nut 3/4 SAE
19		1	Filler Plug 3/8 Gas	52	A286	2	Carbon Brushes
20		1	Gear Box	53		2	3/4 x 1/4 Gutter bolts and washers
21	G3	1	Distance Ferrule	54		1	Generator positive lead
22	G274B	1	Oil Throw	55		1	8 1/2" Brush lead
23	G1B	1	Helical Gear Pinion	56		1	Rubber Grommet 3/8 ID No. 116
24	G170	1	Key—Woodruff 1/4 thick	57		2	3/8 x 5/32 Brass RH Metal thread screws
25		1	Plain Washer 3/8 I.D.	58		1	1 1/2 x 3/16 Brass Insulated Brush Stop complete
26		1	Spring Washer 3/8 Dia.	59		1	1 1/2 x 3/16 Brass Insulated Brush Stop complete
27		1	Hex Nut SAE	60		1	Com End Plate Insulated Terminal
28		1	Ball Bearing Rear Gear Box	61		1	Com End Plate Terminal
29	6204	1	1" SAE Half Nut				
30		1	1" Spring Washer				
31		1	Helical Gear				
32	D10	1	Woodruff Key 1/4 wide				
33		1					

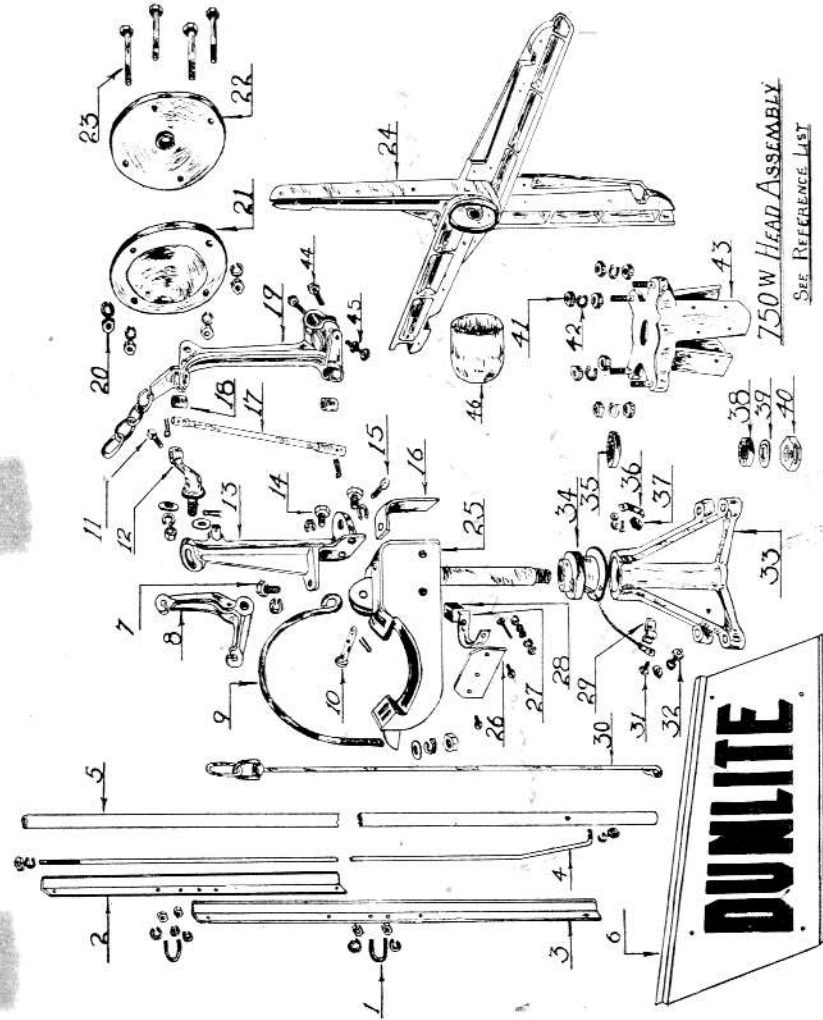


WIND DRIVEN DUNLITE GENERATOR PARTS

SEE REFERENCE LIST

REFERENCE LIST 750 WATT HEAD ASSEMBLY

Ref.	Part No.	Quantity.	Name	Ref.	Part No.	Quantity	Name
1	H276	2	U Bolts complete with nuts and washers, cad plated	23	P3	4	3" x 3/8 Whitworth Bolts, cad plated
2	H275	1	Front Tail Support	24	H6	1	4 blade propeller hub
3	H275	1	Rear Tail Support	25	H155	1	Head Casting
4	H149	1	Tail Suspension Rod	26		1	Black Bakelite Brush Panel, complete with bolts
5	H150	1	Tail Bone	27	H155A	1	Brush Spring
6	H255	2	Tail Wings complete with Bolts	28	286C	1	Copper Morganite Brush
7		1	1" x 3/8 Hex Head Bolts	29	H322	1	Cable Clip, cad plated
8	H1A	1	Bell Crank	30	H151	1	Pullout Rod
9	H148	1	Generator U Bolt	31		1	1 x 1/4 Gutter Bolt
10	H318	1	Pin for Generator U Bolt, cad plated, with split pin	32		1	1 1/4 x 3/16 Brass Round Head Metal Thread and Nut
11		1	1" x 5/16 Hardened Steel Set Screw, cad plated	33	PH5	1	Head
12	H4	1	Adjustable Tail Governing Bolt complete with Nuts and Washers	34	PH7	1	Collector Ring Assembly
13	H2	1	Tail Support Bracket	35	6207	1	Ball Race
14		2	4 x 3/8 Hex Head Bolts	36	H160	1	Earth Brush Spring
15		1	1 x 5/16 Hardened Steel Set Screw, cad plated	37	286D	1	Earth Brush Copper
16	H319	1	Buffer Bracket	38	RL58	1	Ball Race
17	H133	1	Tail Pin, cad plated	39	H193	1	Bottom Grease Retainer
18	H320	1	Bronze Bushings	40	H253	1	Lock Nut Complete with Screw
19	H3	1	Tail Clamp Bracket complete with links	41		8	3/8" Whitworth Nuts, cad plated
20		4	3/8 Hex Head Whitworth Nuts and Spring Washers, cad plated	42		8	3/8" Spring Washers, cad plated
21	P6	1	Front Plate for 2 blade propeller	43	T1	1	Tower Cap 3 post
22	P5	1	2 blade propeller hub	44	T3	1	Tower Cap 4 post
				45		2	1 x 5/16 Bolts and Nuts Hex Head, cad plated
				46	P323	1	1 1/2 x 5/16 Set Screw Stop and Lock Nut
							Spun Aluminium Nose Cap



750 WATT HEAD ASSEMBLY
SEE REFERENCE LIST

3 blade variable pitch

CARE AND ATTENTION OF BATTERIES

The batteries are the reservoir of your electric supply. Treat them well, and they will give you many years of service; abuse them, and their lifetime will be diminished.

Keep the level of Electrolyte half an inch above the plates by adding pure distilled water. You will find that this is necessary more often in Summer, when evaporation is increased.

Avoid spilling the Electrolyte, and keep the top of batteries free from dust and moisture.

A smear of good quality grease across the terminals will lessen corrosion.

On no account must batteries be used as a shelf for unwanted articles, as this practice is injurious to both batteries and self.

A slight overcharge should be given at least every two months, of between four and six hours. Avoid excessive draining of the batteries.

WARNING! Keep all naked lights away from batteries, as explosions are liable to occur.

Test your batteries regularly with your hydrometer.

BATTERY CONNECTIONS MUST BE KEPT CLEAN AND TIGHT. Failure to do this will cause lights to come excessively bright when generator is charging. Can also cause serious damage to plant and relay.

Special Points to Remember

About a week after installation, check over Plant and Tower, and tighten all nuts and bolts.

Never allow Plant to run with the batteries disconnected. Neglect of this will cause globes to be blown, and possible damage to generator.

The generator is not made to run as a motor; attempting to use as motor will result in generator being depolarized.

A slight squeak in generator is sometimes noticed, usually when at low speeds. This is a brush noise only, and causes no harm in the operating of the Plant.

See that maximum charging rate of 20 amps. is never exceeded, or damage will be caused to generator and relay. If charging rate is too high, alter governing as on Page 12.

Should trouble develop, always switch plant out of wind immediately until fault rectified.

GUARANTEE

This Dunlite wind-driven Plant, Serial No. is hereby guaranteed against electrical and mechanical defects for a period of twelve months, provided the following conditions are adhered to:—

- That the plant is installed strictly in accordance with the instructions.
- That the maximum charging rate is not exceeded.
- That the bottom portion of this guarantee is filled in and posted to the manufacturer within one month of installation.
- That the faulty parts are returned freight paid to the factory.

Vacuum Cleaner, Electric	.....	.....	.....	.....	.....
Soldering Iron	.....	100-200	8-16	3.3-6.7	.91-1.82
6-lb. Flat Iron	.....	550	45.8	18.3	5.00
Toaster	.....	550	45.8	18.3	5.00
15-Watt Lamp	.....	15	1.2	.5	.135
30-Watt Lamp	.....	30	2.5	1.0	.27
60-Watt Lamp	.....	60	5.0	2.0	.54
75-Watt Lamp	.....	75	6.3	2.5	.7
100-Watt Lamp	.....	100	8.3	3.33	.9
Kettle	.....	500	—	17.0	5.0
Floor Polisher	.....	300-500	—	9-17.0	3-5.0
Food Mixer	.....	60	5.0	2.0	.54

Voltage Drop of Various Bare Cables

Calculated on 100 yds. of Cable (50-yard Double Run).

Weight per 100 yds	Size of Cable	AMPS.													
		1	2	3	4	5	6	7	8	9	10	15	20	25	30
	1.044	1.5	3.1	4.7	6.3	7.9									
	1.064	.76	1.5	2.2	3	3.7	4.5	5.2	5.9	6.7	7.5				
8.35	7.036	.34	.68	1	1.4	1.7	2.1	2.4	2.7	3.1	3.4	5.4	6.8		
15.0	7.048	.23	.46	.69	.92	1.1	1.4	1.6	1.8	2.1	2.3	3.4	4.6	5.7	6.9
26.5	7.064	.11	.22	.33	.44	.54	.65	.76	.87	.98	1.1	1.6	2.2	2.7	3.3
34	19.044	.08	.17	.25	.34	.42	.51	.59	.68	.76	.84	1.3	1.7	2.1	2.5