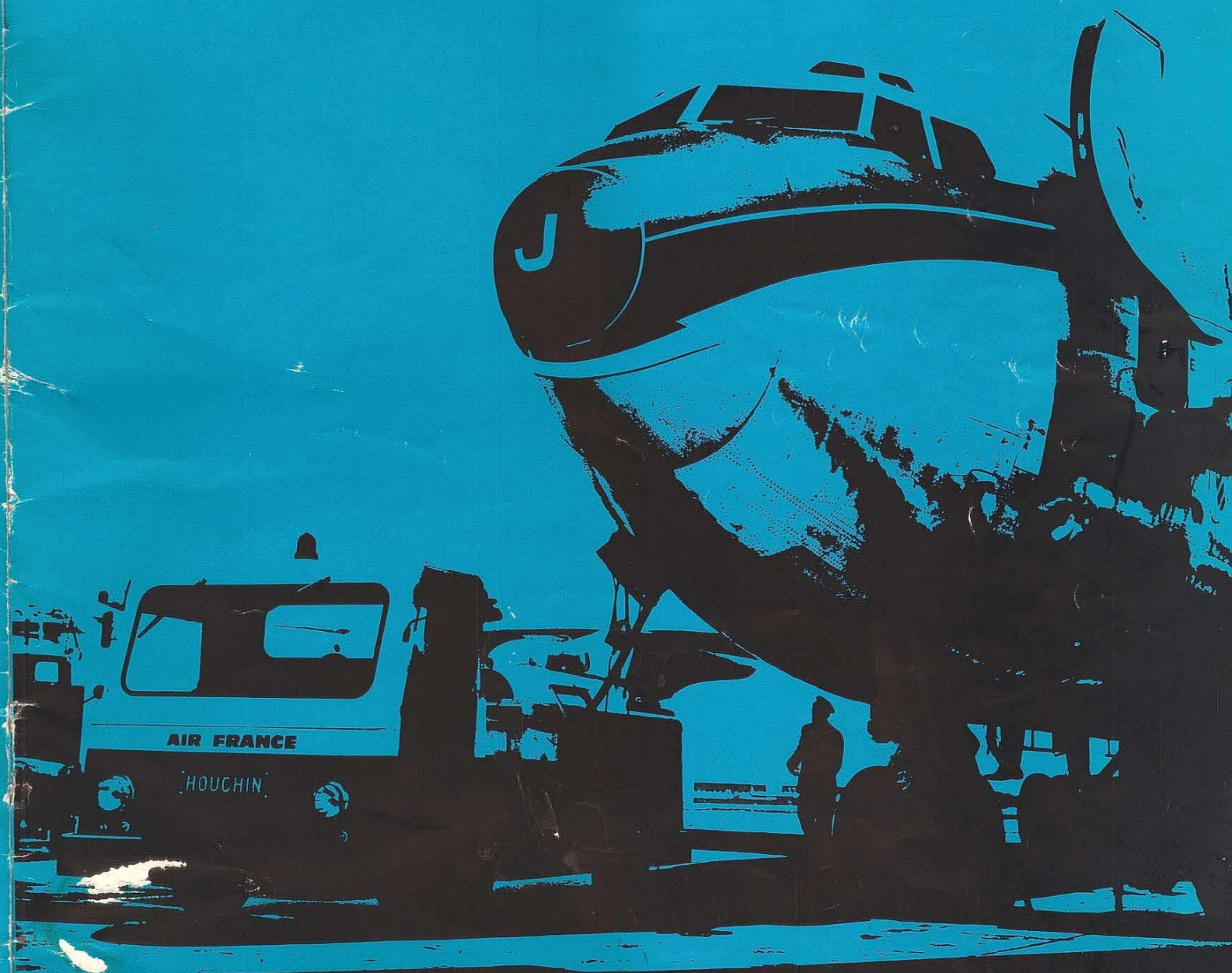
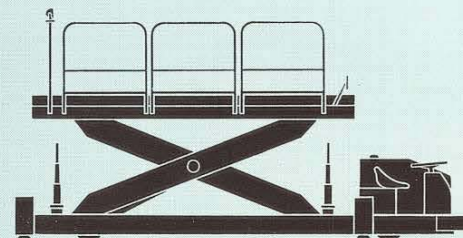
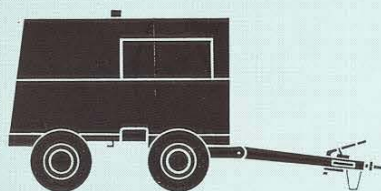
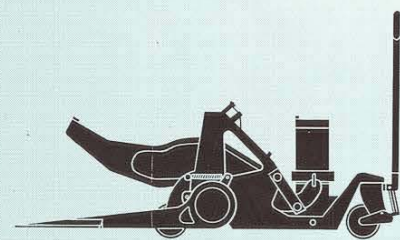
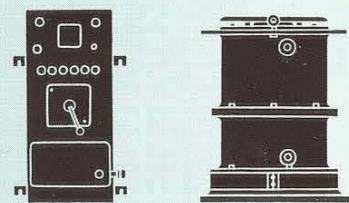
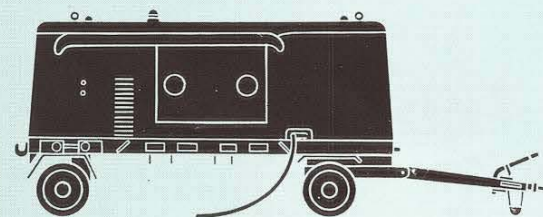
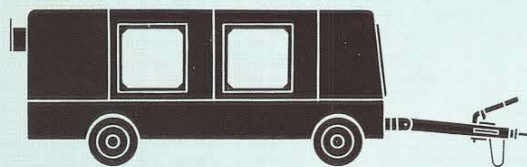
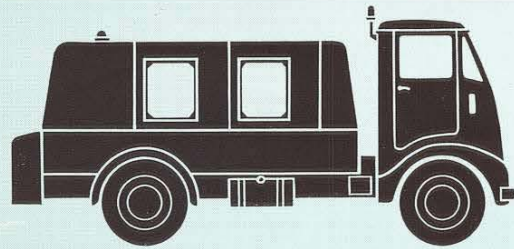
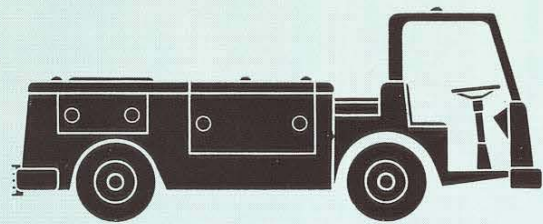


HOUCHIN

HOUCHIN



aircraft ground power and
support equipment



This brochure has been produced to give you an insight into 'Houchin Limited', its organisation and technical know how.

We would like to tell you briefly about our research, development facilities and manufacturing resources as well as illustrating just a few of the products from our comprehensive range of aircraft ground support equipment.

The company was formed in 1920 by the father of the present Managing Director, and specialised in the design, manufacture and installation of medium sized electrical rotating machinery. In 1968 the company obtained a public subscription on the London Stock Exchange.

For the last twenty years to keep pace with the rapidly expanding aircraft industry, the company has specialised in the development of electrical ground support equipment for both Military and Civil aircraft operators. During this time, Houchin Ground Power Units have been operating in varied climatic conditions in over 60 countries.

To ensure the high standard of reliability demanded for these operations, we undertake ourselves the design, development and manufacture of our whole range of equipment.

These are just a few of the reasons why Houchin is one of the largest independent manufacturers of aircraft ground support equipment in the world.

electronics/development

Since its formation the company has placed great emphasis on research, development and design.

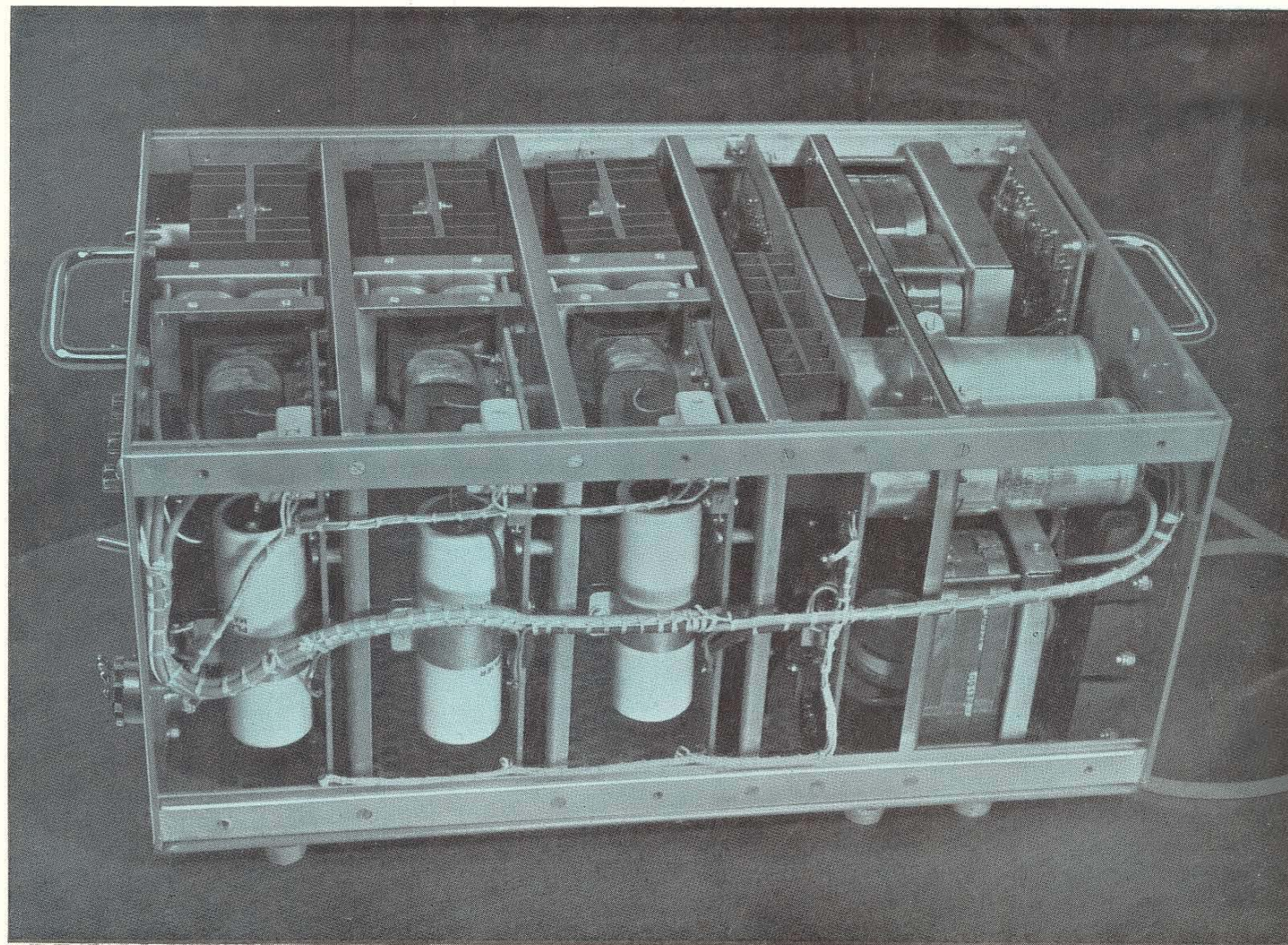
Increasingly stringent demands for reliability and close tolerance outputs from Ground Power Units have resulted in the development of a sophisticated range of controls for the Company's equipment. These include Voltage Regulators, Protection Units for electrical and mechanical systems, Phase Rotation Detectors, Reverse Power Detectors and many other ancillary items.

As power conversion is our business, D.C. power supplies, Static Inverters and Static Converters play a large part in our research programmes. We are already a major supplier of advanced output Static Inverters, ranging from 150VA to

5kVA, single and three phase, at various output frequencies. Current research into Inverter Systems cover size and weight reduction, higher output powers, greater versatility and higher efficiencies.

Our experience and knowledge has naturally led to the design and production of other forms of power control, including thyristor power servo-systems and solid state motor controls up to 150HP.

Here again are more reasons to show you how Houchin intend to maintain their position as one of the largest independent manufacturers of Ground Power Units in the world.



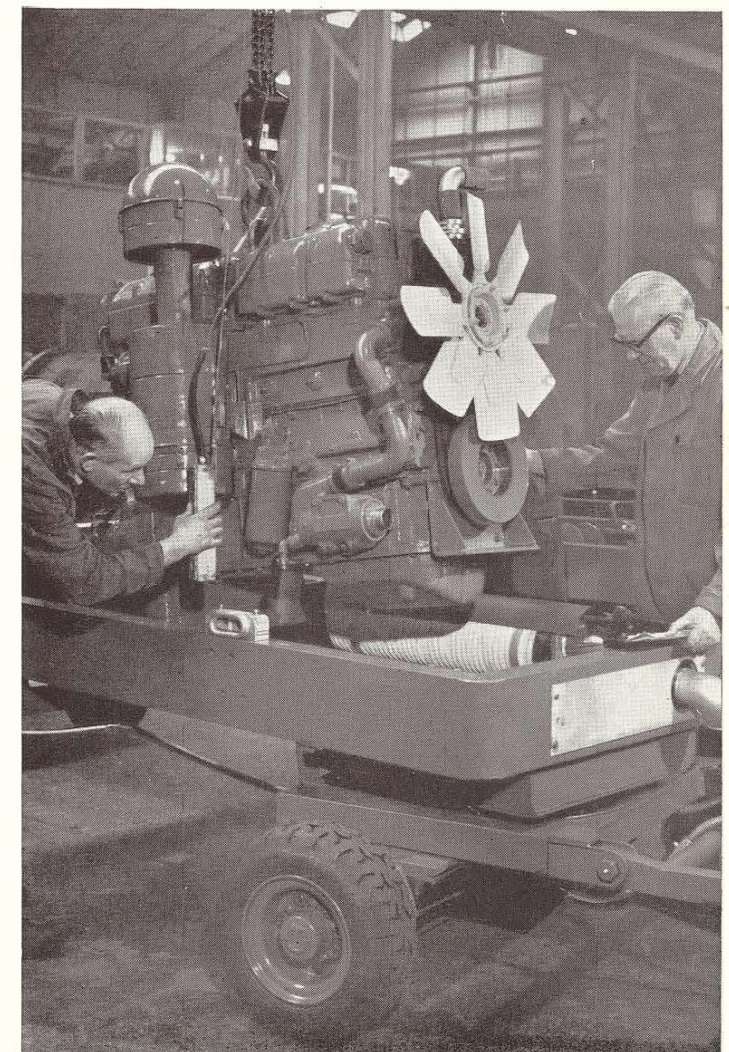
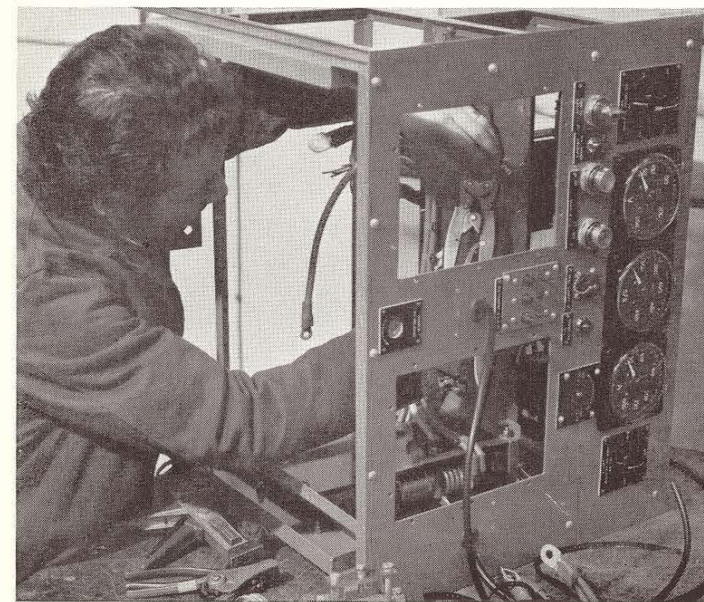
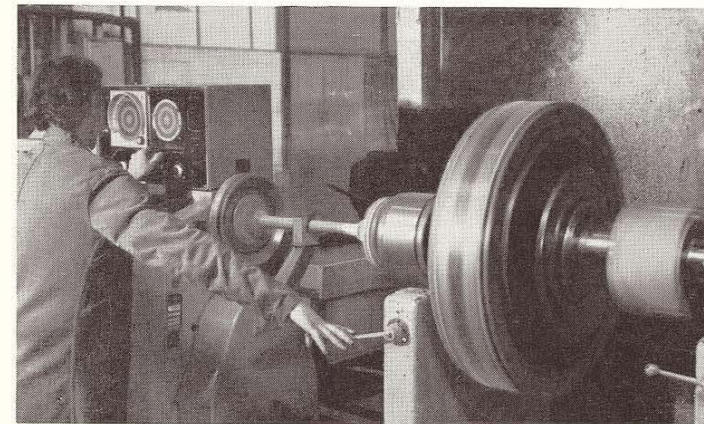
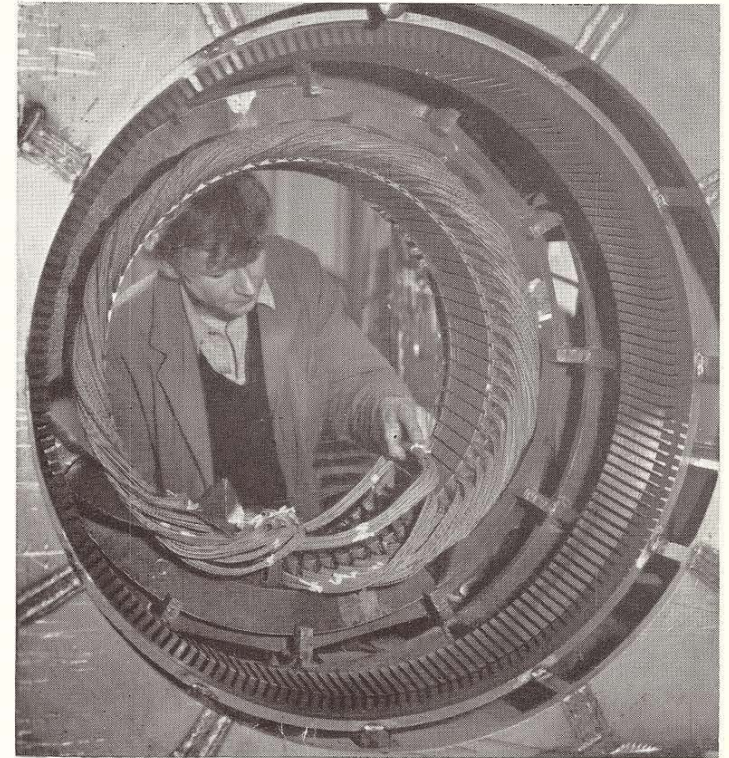
production

The production area of Houchin Limited covers over 130,000 square feet and within this area exist facilities for manufacturing, assembling and testing completely, all Houchin equipment.

We specialise in electrical rotating machinery, and manufacture some 750 Ground Power Units each year depending on their size. Our generating equipment covers a range from 5 to 1000kVA and includes over 80 different models.

By using the latest production and manufacturing methods we ensure full utilisation of our production staff. Our whole labour force of some 500 is relatively small to our total production.

These are just a few more of the reasons to show you how Houchin maintain their position in the world as one of the largest independent manufacturers of Ground Power Units.



Houchin standard units

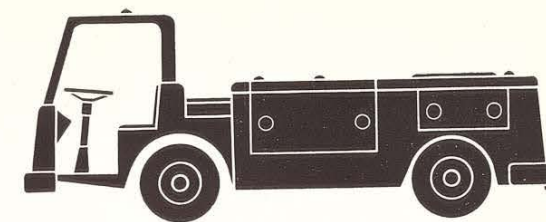
In the space we have available in this brochure it is impossible to show you the complete range of Houchin manufactured equipment. We have selected just a few units to give a general idea of our wide range of ground support equipment.

With the versatility of our design and engineering department, we are able to meet special requirements which are sometimes outside our standard range.

We will of course be very pleased to send you full details of any item upon request, also answer any 400 Hz. electrical power distribution problem you may have.

model 265

self propelled ground power unit



The Model 265 ground power unit is designed as a self-propelled power generating unit for ground servicing checks on radio, radar and other electrical equipment on aircraft having 400 Hz. A.C. systems.

It has a continuous output up to :—

- 1) **75kVA 115/200 volts 400 Hz.**

With the addition of Houchin transformer rectifier units the 265 can be adapted to provide the following choice of outputs.

- 2) **75kVA 115/200 volts 400 Hz.**

and

28 volts D.C. 800/2000 amps

- or 3) **75 kVA 115/200 volts 400 Hz.**

and

28 volts D.C. 800/2000 amps

and

112 volts D.C. 300/800 amps

Overload

The Standard Model is rated at 75kVA at 0.8 power factor but has a peak intermittent rating of:—

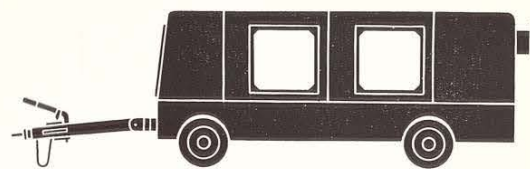
180kVA at 0.4 p.f.

The 265 has a cruising speed of 20-30mph and generally conforms to traffic regulations. It is exceptionally easy to handle, has a fully automatic transmission and derives its power for both traction and generation from a *single* Perkins Turbo Charged six cylinder diesel engine.



model 403

trailer mounted
ground power unit

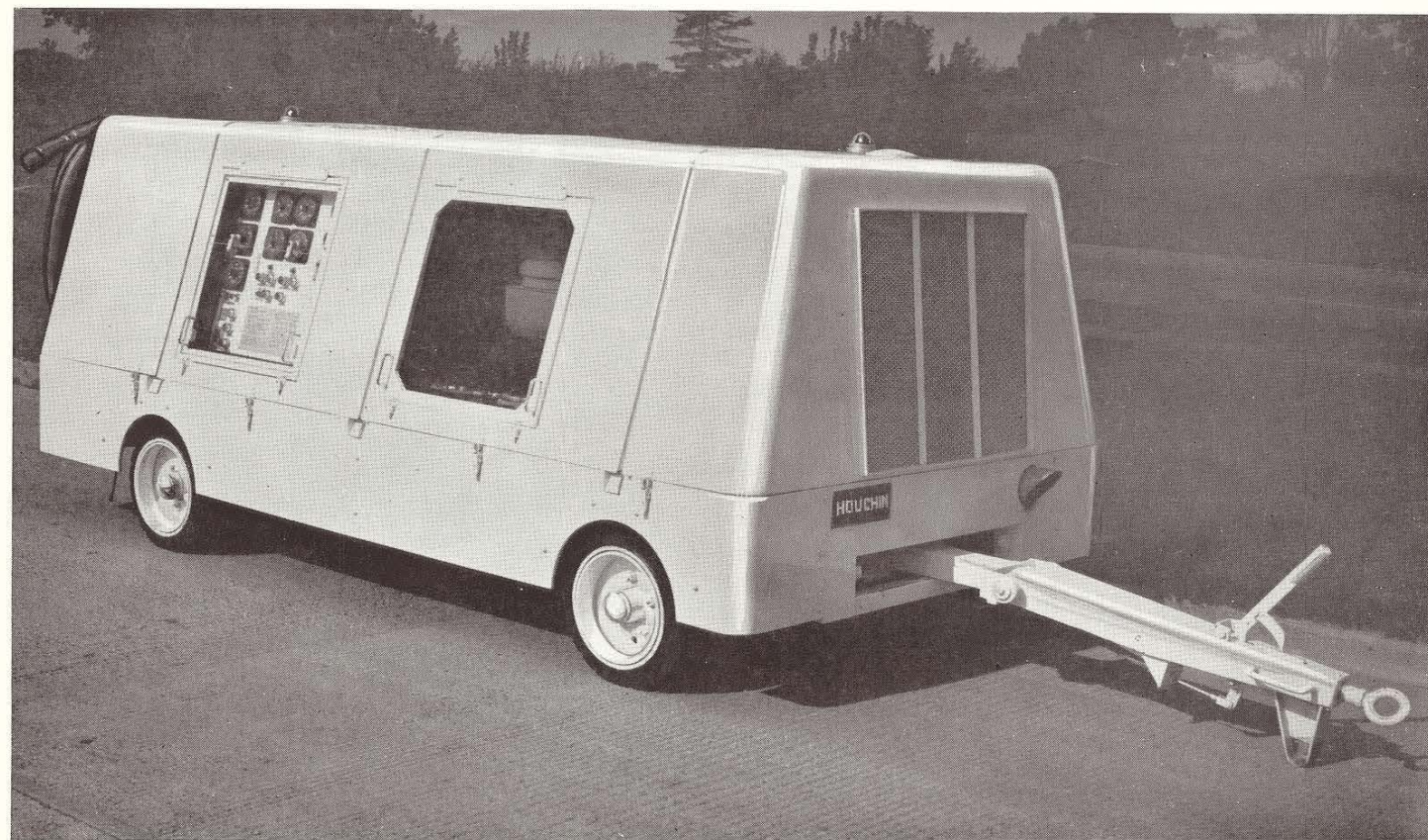


The ground power unit featured here is the Model 403, having a continuous rating of:- 90kVA 115/200 volts 400 Hz. at 0.8 to 1.0 power factor. The following two D.C. ratings are also available.

- 1) **28.5 volts D.C. 800/2500 amps**
- 2) **112 volts D.C. 300/1200 amps**

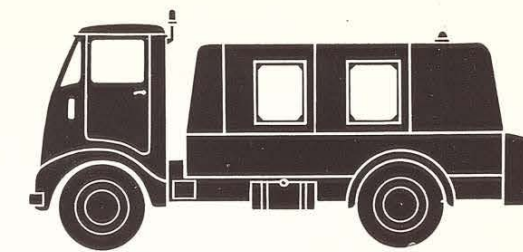
The 403 is designed to give an output of 120kVA intermittently, and is powered by a six cylinder turbo charged diesel engine.

Special attention in the design is given to the layout of items requiring periodic inspection and servicing. The heavy duty chassis suitable for towing over moderately rough ground is fitted with 18in x 7in solid rubber tyred wheels.



model 437

truck mounted units

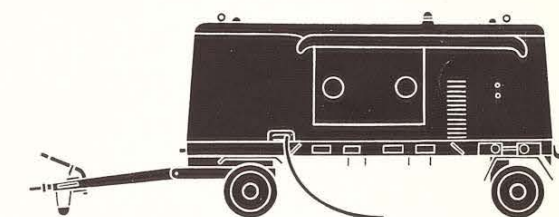


Illustrated is a 100kVA truck mounted Ground Power Unit supplied to B.A.A. which is just one of many units supplied to Airport Authorities in different parts of the world.



model 255

electric/electric
ground power unit

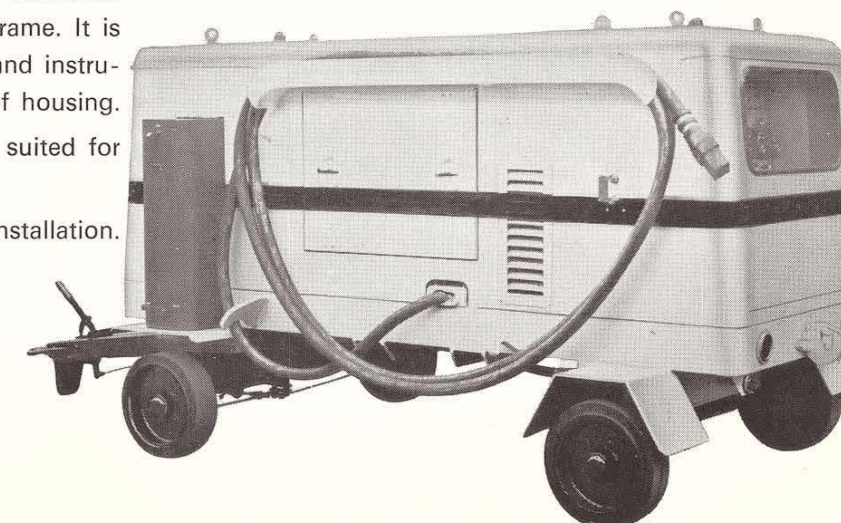


The Houchin Model 255 is an electric motor driven Ground Power Unit. It has an output rating of 75kVA 115/200 volts 3 Phase 400 Hz. at 0.8 power factor. Auxiliary sockets, having an output of 3kW at 28 volts D.C. can be provided as an optional extra.

Generally, the unit consists of a synchronous brushless motor and a brushless alternator in a common frame. It is mounted on a four wheeled trailer. All controls and instruments are included in the complete weatherproof housing.

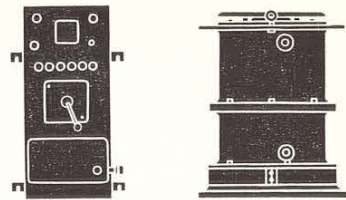
Being completely brushless the 255 is ideally suited for extreme dust and sand laden conditions.

A version of the Model 255 is suitable for fixed installation. A model having an output of 200 kVA is also available.



model 216

frequency converter



The Model 216 Frequency Converter illustrated here is designed to provide a 400 Hz. supply in hangars and workshops for bench testing radio, radar, and similar electrical equipment used on aircraft.

It accepts a 50 Hz. input at 415 volts (other voltages available) three phase and has a continuous output rating of **5 kVA 115/200 volts, 3 phase 400 Hz.**

The converter consists of a motor and alternator vertically mounted in a common frame with a separate control panel designed for wall mounting. It will operate satisfactorily at any ambient temperature between -10°C and $+50^{\circ}\text{C}$. No damage will result when stored in ambient temperatures between -40°C and $+70^{\circ}\text{C}$.

A 15kVA model is also available.



model 469

frequency converter



The illustrated Ground Power Unit is a Houchin designed and manufactured frequency converter for use throughout North America by Air Canada. It is a base mounted G.P.U. designed to accept a 440/480 or 575 volt 60 Hz. 3 phase supply. The unit has a Brushless synchronous motor driven generator giving a **90kVA 115/200 volt 3 phase 400 Hz. output:-** which is regulated and controlled at the plug connection on the aircraft or equipment being serviced. The set is designed to incorporate major assemblies, each easily removable for ease of service and replacement. This also allows the unit to be maintained to the latest standard for this type of equipment.

In very varied operating conditions and throughout an ambient temperature range of minus 40°C to plus 43°C , this Ground Power Unit will start and operate most satisfactorily.

Standard versions of Model 469 are available with outputs of up to:-

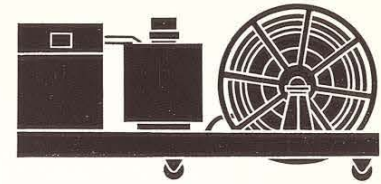
200 kVA 3 Phase, 400 Hz.

with both 50 Hz. or 60 Hz. 3 Phase input.



model 442

automatic booster induction regulator



The A.B.I.R. is an electrical mechanical device developed solely by Houchin Limited to control the voltage on 400 Hz. distribution systems over long cable lengths.

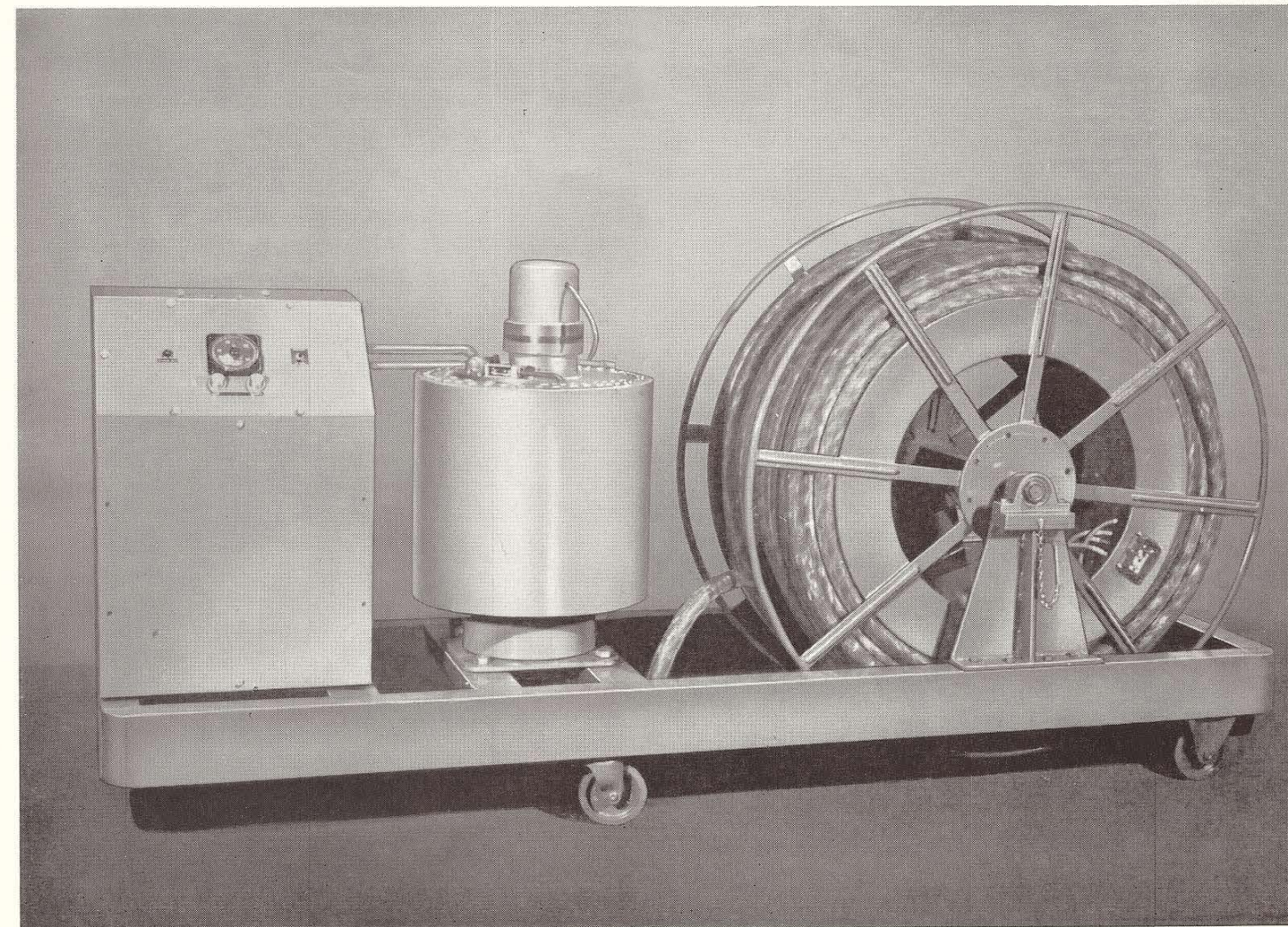
The Houchin A.B.I.R. has therefore been produced to compensate automatically for the voltage changes at the aircraft end of the cable, due to a combination of cable loss and main generator voltage variation.

In a 400 Hz. distribution system an A.B.I.R. Controller will be installed in each feeder. Each Controller will maintain the voltage to within $\pm 1\%$ at the end of any one feeder regardless of the load changes in any of the other feeders.

Any number of A.B.I.R. feeders may be operated from a single generating source provided the base load generator has the capacity to supply the maximum needs of each feeder simultaneously.

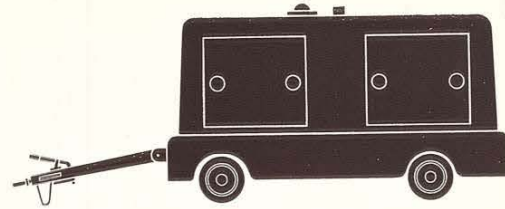
With this new Houchin developed A.B.I.R., 400 Hz. power distribution to 'Service Points' for apron services including finger and passenger bridge systems is now a practical proposition. Such installations comply fully with international specifications.

An A.B.I.R. installation has many advantages over an equivalent number of conventional Ground Power Units. These include lower capital cost, easier and cheaper to maintain, more economical to run together with a saving of space and congestion at terminal points.



model 439

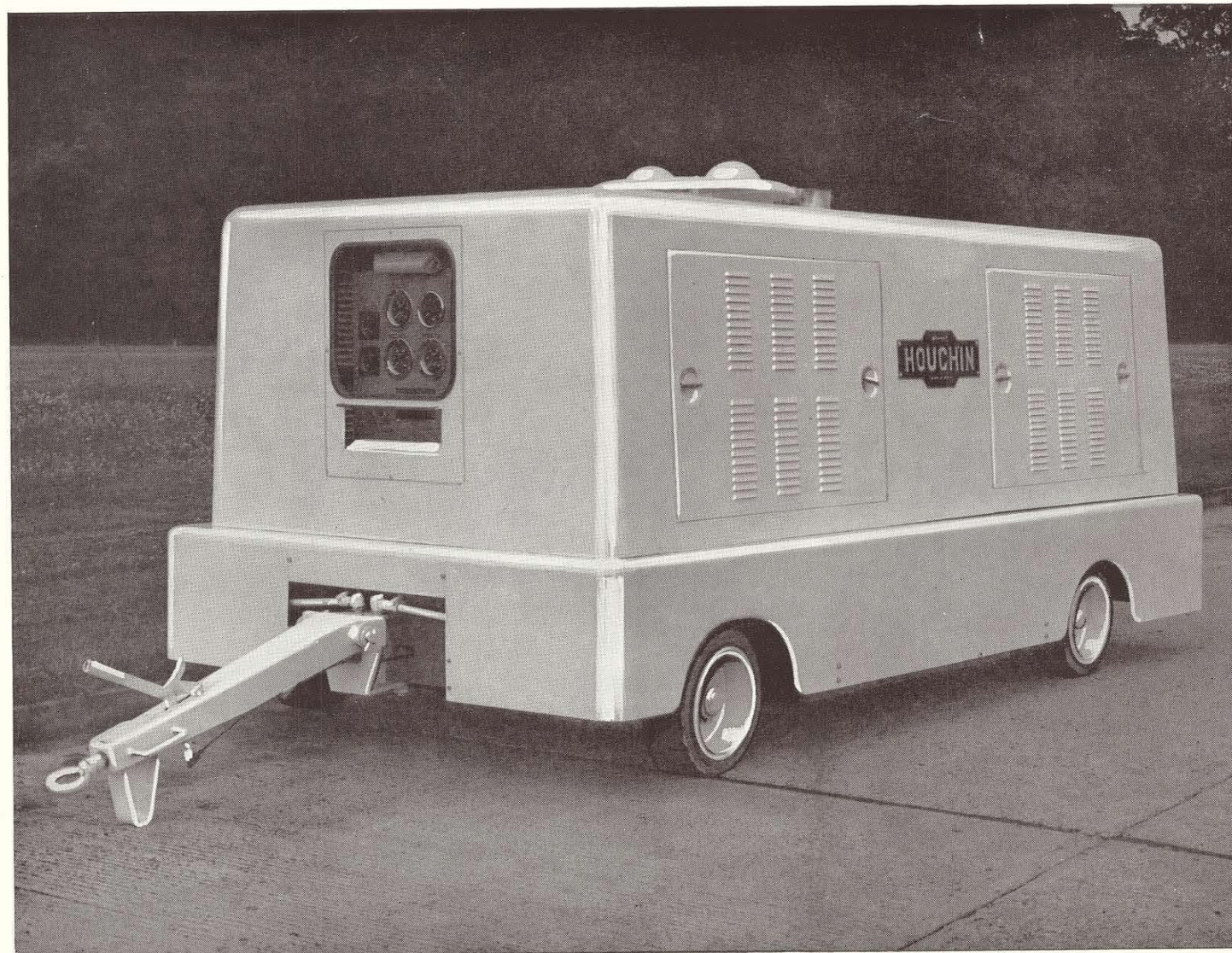
'startair' air start unit



The Model 439 supplies a controlled flow of low pressure air and is suitable for starting all currently operating pure jet engines accepting low pressure air starting. It will provide **120 p.p.m. and has a compressor discharge pressure of 42 p.s.i.g.**

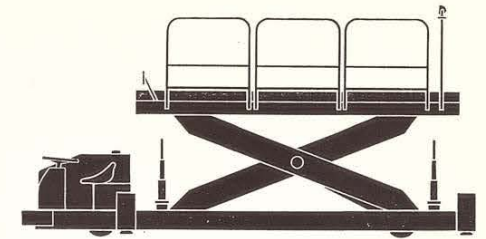
The 439 comprises a diesel or electric motor driven screw compressor with a pneumatic pressure control system.

The electric motor driven version is usually a static installation and the diesel powered unit may be stationary, trailer or truck mounted according to customers requirements.



model 456

freight elevator



The Houchin Self Propelled Freight Elevator illustrated will raise and lower loads of up to **12,000lb to any intermediate height from a minimum of 20in. to a maximum of 140in.** It is diesel powered, hydraulically operated and propelled. It is designed to remain stationary while operating at the aircraft making it possible to load or unload 100,000lb of freight in 20 minutes.

The elevator has a forward speed of 8mph. It has facilities for manoeuvring into precise position and tilting to an angle of $\pm 3^\circ$ from horizontal to equalise the elevator with the aircraft or loading bay.

The loading platform area is 92in x 192in and is capable of accepting 88in x 108in and 88in x 125in pallets. A trailer version of this elevator is also available, together with other models having capacities up to 16,500lbs.



model 475

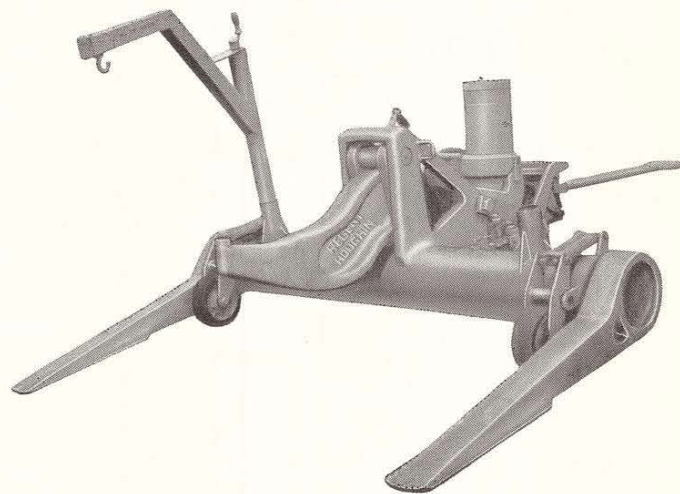
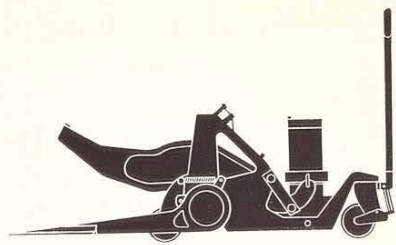
regent jacks

In 1967, and following the Company's policy to increase their range of Aircraft Ground Support Equipment, Houchin Ltd., obtained a licence from the Regent Jack Mfg., Co. Inc. of Downey, California to manufacture their range of Regent Jacks in the United Kingdom.

This licence, initially, allows the Company to market Regent franchise in some sixty countries, mainly in Europe, Africa and the Near East.

Regent Jacks are universally used by major airlines and military authorities throughout the World and wherever you find aeroplanes you will find Regent Jacks. Applications cover all types of modern aircraft including the latest supersonic projects.

The illustrated Rhino axle Jack in its many versions is capable of a lift up to 45 tons from a minimum height of 4 ins. to a maximum of 36 ins.



model 477

welding equipment

With the demand for site and portable welding equipment increasing each year Houchin Ltd. have introduced a 400 amp D.C. Arc Welding Unit to their range of electrical equipment. The main features covering this Houchin designed and manufactured machine are:

- 1) The Prime Mover is a well-proven industrial diesel engine with electric starting as standard.
- 2) The Houchin purpose built generator has a continuous hand welding rating of 400 amp at 40 volts.
- 3) Routine maintenance on the electrical equipment has been eliminated as the generator is completely brushless and the control system is "solid state".
- 4) The Houchin "solid state" control system, for which a provisional patent has been granted, provides a CONSTANT current at any setting in the machine range of 40 to 400 amps.
- 5) Current and voltage may be independently adjusted to give any combination of volt/amp characteristic.
- 6) A 1 KW 110 volt D.C. auxiliary supply is fitted as standard.
- 7) The Unit can be supplied "Base mounted" or mounted on 2 or 4 wheel trailers having independent suspension on each wheel. Equipment to comply with the U.K. Road Traffic Acts can be fitted when required.

The illustrated unit shows a 4 wheel trailer mounting configuration.



Houchin coverage world-wide



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Telex: 96178

Cables: GARFODIA Ashford Kent

Canadian Houchin Limited

464 Merton Street, Toronto 7, Ontario, Canada

Telephone 485-6636

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