

PART III—CLASS (b) OF THE TERMS OF REFERENCE ALTERNATORS AND GENERATORS OTHER THAN THOSE IN CLASS (a) : MOTORS

CHAPTER 15. THE BACKGROUND

(1) The machinery

301. Class (b) of our reference consists of A.C. motors of 1 h.p. and over, D.C. motors of 1 h.p. per 1,000 r.p.m. and over, D.C. generators with an output of 0.75 kW per 1,000 r.p.m. and over, and alternators of 10 kVA and over (except turbine driven alternators of 300 kW and over which are included in class (a)). It thus includes all electric motors, and all electricity generating plant driven by prime movers other than turbines, except those of the very smallest capacity. The prime movers which drive the generators in this class, generally oil or steam engines, are not covered by the reference.

302. All the machinery in class (b) is designed to transform electrical energy into mechanical energy or vice versa; all has the same fundamental design consisting of a rotor, that is a rotating core embodying some form of winding, and a stator, that is a stationary form of winding surrounding the rotor. In spite of this basic similarity there is great diversity in the detailed design of the various types of machines according to the characteristics, such as starting current and speed/load variation, which are required, and these in turn depend on the uses to which the machines are to be put.

303. Electric motors are required for a large variety of purposes in many different industries, each with its own special needs: to meet these purposes and needs a wide range of types and sizes of motors has been developed. Electricity is normally generated as alternating current and most of the motors in use are therefore A.C. motors, many of them being to manufacturers' standard designs.* The main types of A.C. motors are:—

- (i) Induction motors. The simplest and cheapest type of induction motor is the squirrel cage motor which is widely used for driving such equipment as machine tools, conveyors, pumps and fans; but it has certain inherent limitations in performance, particularly as regards starting characteristics. Another type of induction motor is the slip ring motor, which is used for some purposes for which the squirrel cage motor is unsuitable because of these limitations;
- (ii) Commutator motors, which are used for driving lifts, printing presses and other equipment where a variable speed is required;
- (iii) Synchronous motors, which are used where a constant speed drive is essential, e.g. for driving pumps, blowers and compressors.

The main constructional difference between these types is in the form of winding used.

304. D.C. motors can more easily be made to run at higher efficiencies at variable speeds than can A.C. induction motors. They are therefore used mainly where this characteristic is important, or where an A.C. supply is not available, as, for example, on board many ships. One important application is in electric traction where D.C. motors, at least in this country, are universal. D.C. motors are also used in hoisting equipment for mines and

* "Standard" here means manufacturer's standard. National standards laid down in BSS 2613 are minimum standards for performance. National dimensional standards have been issued, under BSS 2083, only for 50 cycle squirrel cage totally enclosed fan cooled foot mounted motors for voltages not greater than 650 V and ratings up to 20 h.p. at 1,500 r.p.m. or 25 h.p. at 3,000 r.p.m.

in drives for rolling mills, when they normally form part of a specially designed composite equipment including a motor/generator unit as well as control gear.

305. In addition to the different characteristics already outlined, motors are contained in different forms of enclosure designed according to need to give varying degrees of protection to the operators or the windings or both. Thus in certain operating conditions, where it is necessary to give extra protection to the interior of the machine, screen protected, drip proof or totally enclosed motors may be employed instead of the more usual "protected" machines. In such places as mines and oil refineries a flame-proof enclosure is used.

306. Apart from their application in hoisting equipment and rolling mills, most generators covered by this class of our reference are made to be driven by oil engines; such generating sets are for standby use or for supplying electricity where the demand is small or where other forms of drive are expensive or are not available.

307. A great deal of the machinery in class (b) must be made to order, because the technical conditions of the installation are not repeated elsewhere. Conditions at one steel works or colliery requiring electrical equipment for a rolling mill or winding engine, for example, will not be exactly repeated in other steel works or collieries; and similar considerations apply to most large machinery in this class. Even in the case of small motors a high proportion is required for special purposes involving some modification of the manufacturer's standard design. Such motors may be made largely from standardised components, but since the demand for each variation from the standard is small these, too, must be made to order.

308. Where there is sufficient demand for similar machines, savings in cost can be achieved by putting them through the works in batches. Further savings in cost, over and above those due to such "batch" production, can be obtained by "flow" production, using specialised equipment in a factory laid out to produce a limited range of machines. "Flow" production is in practice confined to the smallest A.C. motors of the maker's standard design and to those makers with a large enough market for these machines. It can be applied by a manufacturer large enough to set aside one factory for the purpose or by a smaller manufacturer specialising in a limited range of machines; in either case the particular production unit is intended to meet market requirements only for those types and sizes of machine in most common demand.

309. Subject to some exceptions, the arrangements of the Groups for machinery in class (b) draw a distinction between the largest machinery and the rest, that is to say that A.C. motors up to 500 h.p., D.C. motors up to 650 h.p. per 1,000 r.p.m., alternators up to 2,000 kVA and D.C. generators up to 485 kW per 1,000 r.p.m. are governed generally by different agreements from those applying to machines with outputs above those limits.* The International Electrical Association Ltd. (IEA) agreements are concerned only with the largest machines. Accordingly we have found it convenient to refer to these two categories as "small" and "large" machinery respectively, although the distinction is in many ways an arbitrary one. Practically

* The following are exceptions to this classification:—

- (i) The Alternator Price Agreement now covers all alternators of 10 kVA and above but until recently it conformed to the general pattern by excluding machines of 2,000 kVA and above.
- (ii) The Electrically Driven Rolling Mill (Electrical Parts) Agreement and the Electrically Driven Winding Engine (Electrical Parts) Agreement include equipments with a main drive of 250 h.p. and over.

all the large machines are made to order, but this is true of a considerable proportion of the small machines as well. Production by batch or flow methods is most commonly applied to the range of standard A.C. motors up to 50 h.p.

310. The main existing British Standard Specification* for electric motors and generators relates to minimum performance and lays down heating limits, insulation, over-load performance and tests: there is also a specification covering dimensional standards for small A.C. motors.† Machines produced by different manufacturers but capable of fulfilling the same functions may differ widely in design, quality of materials and workmanship.

(2) The Pattern of Trade

311. The following table of manufacturers' net sales shows the relative importance of the different categories of machinery in this class in the home and export trades in 1951 and 1952:—

£'000

Category of Machinery	1951			1952		
	Home	Export	Total	Home	Export	Total
Small Motors and D.C. Generators	16,391	5,262	21,653	20,980	5,265	26,245
Small Alternators	2,259	765	3,024	2,578	801	3,379
Large D.C. Generators	147	48	195	59	26	85
Turbine Driven D.C. Generators...	73	9	82	7	3	10
Large Motors and Alternators ...	1,078	948	2,026	1,347	1,023	2,370
Marine Equipment	2,276	289	2,565	2,716	415	3,131
Traction Equipment	1,878	1,297	3,175	1,443	1,812	3,255
Rolling Mill Equipment	1,982	238	2,220	1,923	399	2,322
Winding Engine Equipment	179	466	645	353	630	983
TOTAL	26,263	9,322	35,585	31,406	10,374	41,780

It will be seen that in each of these two years sales of small motors and D.C. generators accounted for over 60 per cent. of total net sales. In 1952 export sales amounted to about a quarter of the total sales of machinery in class (b), compared with about a half for class (a) and two-fifths for class (c). Much of the smaller machinery in class (b) which is included in home sales is subsequently incorporated in composite plant some of which is eventually exported.

312. There is an important difference between the three classes of machinery in the number of buyers. The home market for machinery in classes (a) and (c) is dominated by the Central Electricity Authority (CEA) and the Area Boards, but there is no dominant buyer or dominant class of buyer of machinery in class (b), although the more specialised types of machine have a limited market.‡ There are also some important variations in the channels of trade in machinery within class (b), and in particular between large and small machinery and between the home and export markets.

313. The two most important classes of buyers to which the manufacturers sell are "manufacturing resellers"—that is, purchasers of electrical machinery for sale after incorporation with machinery of their own manufacture in

* The Electrical Performance of Rotating Electrical Machinery—BSS 2613/1955

† Dimensions of 3-Phase Electric Motors—BSS 2083/1954 (see footnote to paragraph 303).

‡ For example, the National Coal Board is the sole buyer in the home market of winding engines, but electrical equipment for these engines forms only a small part of the total sales of machinery in class (b).

composite machines or plant such as machine tools, cranes, lifts and oil engine driven generating sets—and direct users, mostly large industrial concerns. In addition, some of the electrical machinery manufacturers incorporate their own electrical products in composite machinery also of their own manufacture and so fulfil a similar function to the manufacturing resellers. The following table shows the relative importance of these three channels in the home market for each category of machinery in 1952:—

Category of Machinery*	Sold to Manufacturing Resellers	Incorporated in Composite Plant of own Manufacture	Sold to Direct Users	Sold to Other Buyers
	per cent.	per cent.	per cent.	per cent.
Small Motors and D.C. Generators	42·4	9·6	39·8	8·2
Small Alternators	68·1	12·7	16·2	3·0
Large Motors and Large Alternators	12·8	43·8	39·8	3·6
Marine Equipment	61·4	11·3	27·2	0·1
Traction Equipment	17·5	6·0	76·5	Nil
Rolling Mill Equipment	9·6	Nil	90·4	Nil
Winding Engine Equipment ...	6·9	Nil	93·1	Nil

* Turbine driven D.C. generators and large D.C. generators are omitted from this table on account of the very small turnover.

314. Broadly speaking, in the home market sales to “resellers” are more important in the case of small machinery and direct sales to “users” are more important in the case of large machinery. The classification “other buyers” in the table includes electrical contractors and wholesalers: sales to these classes of buyers are appreciable only in the case of small motors and D.C. generators.*

315. Small machines, unless of special design, are generally bought by users or resellers direct from selected manufacturers. But invitations to tender are put out by some buyers even for these machines. Large machines, particularly machines for special purposes which are bought with mechanical equipment, are generally put out to tender, though replacements may be bought from the original manufacturer without the submission of further tenders.† In the case of tenders for composite plant the maker of the mechanical equipment is often the main contractor or the seller of the complete unit: where this is so the final purchaser may specify the maker of the electrical machinery to be used.

316. There is insufficient information available to enable us to make a quantitative assessment of the relative importance of the different types of buyers in export markets. A high proportion of sales are made direct to overseas customers by the overseas branch offices and agents of the manufacturers.

(3) The Manufacturers

317. More than 100 concerns are known to manufacture or recondition machinery in this class of the reference. Many of them are small or are

* Contractors undertake installation for their customers—generally, though not always, the smaller users—and usually buy direct from the manufacturers. In some cases the machinery may be bought by the user but installed on contract.

† Differences in frame sizes, etc. in the designs of different manufacturers may preclude any alternative for replacements.

only reconditioners,* and 98 per cent. of the total sales in 1952 were accounted for by 59 manufacturers. The 12 largest manufacturers were responsible for about three-quarters of the total and the five largest for half the sales.

318. The following table, which covers all manufacturers whose total sales of machinery in class (b) in 1952 were £250,000 or more, gives the names of the principal manufacturers and shows the range of their manufacturing interests in the class:—

Manufacturers	Small Motors and D.C. Generators	Small Alternators	Large D.C. Generators	Large Motors and Alternators	Marine Equipment	Traction Equipment	Rolling Mill Equipment	Winding Engine Equipment
<i>Members of the Groups in 1952*</i>								
W. H. Allen, Sons & Co. Ltd.	X	X	X	X	X			
The British Thompson-Houston Co. Ltd. ...	X	X	X	X	X	X	X	X
Bruce Peebles & Co. Ltd. ...	X	X	X	X	X			X
The Brush Electrical Engineering Co. Ltd. ...	X	X	X	X		X		
Bull Motors (E. R. & F. Turner Ltd.)	X				X			
Crompton Parkinson Ltd.	X	X	X	X		X		
The English Electric Co. Ltd.	X	X	X	X	X	X	X	X
The General Electric Co. Ltd.	X	X	X	X	X	X	X	X
The Harland Engineering Co. Ltd.	X	X	X	X				
Lancashire Dynamo & Crypto Ltd.	X	X	X	X				X
Lawrence, Scott & Electromotors Ltd. ...	X	X	X	X	X			
Macfarlane Engineering Co. Ltd.	X	X						
Mather & Platt Ltd.	X	X	X	X	X			
Mawdsley's Ltd.	X	X			X			
Metropolitan-Vickers Electrical Co. Ltd. ...	X	X	X	X	X	X	X	X
A. Reyrolle & Co. Ltd. ...	X	X						
Veritys Ltd.	X	X			X			
<i>Non-Members of the Groups</i>								
Brook Motors Ltd.	X							
Electric Construction Co. Ltd.†	X	X	X	X	X		X	

* Some of the Group manufacturers are not signatories of all the agreements covering machinery within class (b) of types which they manufacture. All signatories of IEA agreements relating to machinery in class (b) are also signatories of the corresponding Group agreements.

† Since 1952 this company has joined the Group concerned with Large Motors and Alternators.

* The annual turnover of the reconditioning trades, as far as we can estimate it, is between £1 million and £1½ million of which nearly two-thirds represents sales and the remainder the value of work carried out in reconditioning customers' goods.

Manufacturers	Small Motors and D.C. Generators	Small Alternators	Large D.C. Generators	Large Motors and Alternators	Marine Equipment	Traction Equipment	Rolling Mill Equipment	Winding Engine Equipment
<i>Non-Members of the Groups—contd.</i>								
Electrical Power Engineering Co. (Birmingham) Ltd.	X							
Electro Dynamic Construction Co. Ltd. ...	X				X			
Horace Green & Co. Ltd.	X							
Harland and Wolff Ltd.	X	X		X	X			
Higgs Motors Ltd. ...	X	X						
Newman Industries Ltd.	X							
Hugh J. Scott & Co. (Belfast) Ltd. ...	X	X			X			
Small Electric Motors Ltd.	X				X			
J. Stone & Co. (Deptford) Ltd.	X							

319. Only four manufacturers, The British Thomson-Houston Co. Ltd. (BTH), Metropolitan-Vickers Electrical Co. Ltd. (Metro-Vick), The English Electric Co. Ltd. (English Electric) and The General Electric Co. Ltd. (GEC), make virtually the whole range of machinery in this class of the reference. A few others make a fairly wide range and some of them, including W. H. Allen, Sons & Co. Ltd., Crompton Parkinson Ltd. (Crompton) and The Brush Electrical Engineering Co. Ltd. (Brush), either directly or through subsidiary or associated companies, make machinery in other classes. A number have manufacturing interests in plant for driving or to be driven by the generators and motors in this class. Brush, for example, is a considerable maker of small alternators in class (b), and, through associated companies which are also members of the Brush Group, is also interested in the production of oil engines, the main prime movers for this type of alternator.

(4) The Group and International Electrical Association Ltd. Agreements

320. There are 19 current agreements relating to machinery in class (b), of which 13 are operated by the Groups and six by the IEA. In the table which follows IEA agreements are shown in italics. There are also six further Group agreements which include some machinery in class (b); but they are primarily concerned with machinery in class (a),* and we have described their provisions and operation in Chapters 6 to 12.

* Turbine driven D.C. generators are in class (b) and are covered by the following Group agreements:—

- Small Turbine Driven Alternator and Generator Agreement (Home).
- Small Turbine Driven Alternator and Generator Price Agreement (Home).
- Small Turbine Driven Alternator and Generator Agreement (Export).
- Small Turbine Driven Alternator and Generator Price Agreement (Export).
- Ship Propulsion Equipment Agreement.
- Marine Turbo-Generator Agreement.

(see paragraph 152).

Category of Machinery	Agreement	Scope*	Purpose
<i>General Purpose</i> Small motors and D.C. generators.	Dynamo and Motor Agreement.	Home and indirect export.	Notification and price.
	Dynamo and Motor (Export) Agreement.	Direct export ...	Notification and price.
Small alternators ...	Alternator Price Agreement†.	Home and indirect export.	Notification and price.
Large motors, alternators and D.C. generators.	Large Dynamo and Motor Agreement.	Home and indirect export.	Notification and compensation.
	Large Electric Machine Agreement.†	Home and indirect export.	Price.
	Generator Price Agreement	Home and indirect export.	Notification and price.
	<i>Generator and Motors Notification Agreement.</i>	Direct export ...	Notification.
	<i>Rotating Condensers Notification Agreement.</i>	Direct export ...	Notification.‡
	<i>Rotating Converters Notification Agreement.</i>	Direct export ...	Notification.‡
<i>Special Purpose</i> Motors and generators for marine use.	Marine Motor and Generator Agreement.	Home and indirect export.	Price.
Rolling mill equipment.	Electrically Driven Rolling Mill (Electrical Parts) Notification Agreement.	Home	Notification and compensation.
	Electrically Driven Rolling Mill (Electrical Parts) Agreement.	Home	Price.
	<i>Rolling Mill Equipments Notification Agreement.</i>	Direct export ...	Notification.‡
Winding, hoisting and haulage equipment.	Electrically Driven Winding Engine (Electrical Parts) Notification Agreement.	Home	Notification and compensation.
	Electrically Driven Winding Engine (Electrical Parts) Agreement.	Home	Price.
	<i>Hoisting Equipments Notification Agreement.</i>	Direct export ...	Notification.‡
Electric traction equipment.	Railway Traction Electrical Equipment Agreement.	Home and export	General consultation.
	Trolleybus Electrical Equipment Agreement.	Home and export	General consultation.
	<i>Electric Traction Equipment Notification Agreement.</i>	Direct export ...	Notification.

* Indirect exports are sales of machinery for use outside the home territory of an agreement which result from enquiries from addresses within it.

† Large alternators have recently been deleted from the subject matter of the Large Electric Machine Agreement and added to that of the Alternator Price Agreement, which now covers all alternators in class (b).

‡ See paragraphs 323 and 325 for *ad hoc* price and compensation arrangements.

The subject matter of each agreement is set out in detail in Appendix 4.

321. As will be seen from the table above, the agreements fall into two main groups: those relating to machinery with a very wide range of uses (for convenience called "general purpose" agreements, though many of the individual machines they cover are carefully designed to carry out particular

jobs), and those relating only to machinery for certain special uses. Machinery covered by agreements in the latter group is in most cases specifically excluded from those in the former group; where it is not it is nevertheless regarded as excluded in practice. There is no inter-relationship between the machinery covered by different agreements such as exists in the case of machinery in class (a), but we mention in paragraph 330 the arrangements between signatories of some agreements covering machinery in class (b) and makers of related plant outside the scope of our inquiry.

322. The current Group agreements relating to the supply in the home market of machinery in class (b) provide, between them, for:—

- (i) common minimum prices for most of the machinery (the principal exceptions being electric traction equipment and machinery for use on H.M. ships), together with a number of supporting practices, such as agreed discount arrangements and uniform conditions of sale and contract;
- (ii) the central notification of the more important enquiries and orders, except in the case of traction equipment and marine motors and generators;
- (iii) compensation for tendering expenses in the case of most large machinery;
- (iv) general consultation between signatories; this is the main purpose of the two agreements relating to electric traction equipment and is one of the expressed objects of the other agreements.

323. The position in the export market cannot be so easily summarised.* But broadly speaking, with the exceptions already mentioned in connection with the home market, there are price arrangements in force under Group agreements for the exports of small motors and small D.C. generators, and for "indirect exports" (see footnote * to table in paragraph 320) of marine motors and non-turbine driven generators, large motors, alternators both large and small falling within this class of the reference, and large D.C. generators. *Ad hoc* price arrangements are also made from time to time on export enquiries for hoisting (winding engine) equipment, rolling mill equipment, rotating condensers and rotating converters notified under IEA agreements.

324. There are notification arrangements in force under Group agreements for the larger export orders for small motors and D.C. generators, for the larger indirect export orders for small alternators, and for all indirect exports of large D.C. generators, large motors and large alternators, and under the IEA agreements for direct exports of some of the larger machinery.

325. The Group agreements make no provision for compensation for tendering expenses on exports of machinery in class (b), except for some indirect exports of large motors and alternators and direct exports of motors for driving centrifugal blowers and compressors. *Ad hoc* arrangements for compensation are sometimes made when prices are arranged for certain of the enquiries under the IEA notification agreements.

(5) Membership of the Agreements

326. 23 United Kingdom manufacturers of machinery in class (b) are signatories of one or more of the Group and IEA agreements concerned with machinery in this class (see Appendix 3). In the years 1951 and 1952

* The Irish Republic and the Channel Islands are included in the "home territory" of all Group agreements.

the signatories were responsible for more than 70 per cent. of total net sales of all machinery in the class.

327. Most of the manufacturers making machinery in class (b) on a large scale, including the four referred to in paragraph 319 who make almost the whole range of machinery covered by our reference, are signatories of one or more of the agreements. Some are signatories of all the agreements relating to machinery of types which they make, but a number belong only to agreements covering the types in which they are mainly interested. Under the Group system, in those cases where notification and price arrangements for similar machinery in the same territory are covered by separate agreements, the membership of each pair of related agreements is generally the same.* Since the IEA agreements cover only the larger machines in this class they have in some cases fewer signatories than the corresponding Group agreements which cover smaller machines as well.

328. Most of the manufacturers who are not signatories of any agreement are small or have a very minor interest in machinery in this class. There are, however, also a few larger concerns which do not subscribe to any of the agreements; they include in particular one company which concentrates on the production in quantity of a narrow range of machines and is one of the largest producers of electric motors in the United Kingdom. We describe these manufacturers and their products further in Chapter 20.

329. The following table, based on sales in 1952, shows the relative importance by value of signatory and non-signatory manufacturers as suppliers of the principal categories of machines:—

Category of Machinery	Home			Export		
	Signatories of an agreement relating to this machinery	Signatories of an agreement relating to other machinery in class (b)	Signatories of no agreements relating to class (b) goods	Signatories of an agreement relating to this machinery	Signatories of an agreement relating to other machinery in class (b)	Signatories of no agreements relating to class (b) goods
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Small Motors and D.C. Generators	63	Nil	37	70	1	29
Small Alternators ...	67	8	25	83	1	16
Large D.C. Generators ...	95	Nil	5	100	Nil	Nil
Large Motors and Alternators ...	88	6	6	99	1	Nil
Marine Motors and Generators ...	71	Nil	29	81	Nil	19
Traction Equipment	94	6	Nil	100	Nil	Nil
Winding Engine Equipment ...	91	8	1	87	10	3
Rolling Mill Equipment ...	100	Nil	...	100	Nil	Nil

... = negligible.

The table shows that the entirely independent manufacturers who do not subscribe to any Group or IEA agreements concentrate largely on the smaller

* The Large Dynamo and Motor Agreement (notification) and the Large Electric Machine Agreement (price) are exceptions.

machines in this class. Since the table takes into account all relevant Group and IEA agreements, whether or not they control prices, it should not be taken as providing an accurate measure of the extent of price competition (see paragraph 345).

330. There are three agreements between the signatories of certain Group agreements and makers of related plant. These are:—

- (i) A joint agreement between signatories of the Dynamo and Motor Agreement, the Alternator Price Agreement and the Generator Price Agreement on the one hand and the makers of certain oil engines used for driving alternators and D.C. generators on the other, providing for reciprocal discounts* on certain types of machinery and for general co-operation between signatories; the agreement does not cover exports.
- (ii) An intercontracting agreement between the signatories of the Electrically Driven Rolling Mill (Electrical Parts) Agreement and members of the Steel Works Plant Association providing for discounts† on the sale of certain electrical equipment to or through members of the Association.
- (iii) An intercontracting agreement between signatories of the Electrically Driven Winding Engine (Electrical Parts) Agreement and the Winding Engine Makers Association, which provides for a discount or handling charge on sales of winding engines to the electrical machinery manufacturers, who are usually the main contractors, or of electrical equipment to the winding engine makers.‡

CHAPTER 16. ORIGINS OF THE AGREEMENTS: NOTIFICATION AND COMPENSATION FOR TENDERING EXPENSES

(1) Origins

331. The first agreement relating to machinery in class (b) was introduced in 1913. It dealt with the prices of small motors and generators. A notification agreement for large generators and motors followed shortly afterwards. The early arrangements did not operate without interruptions, and it is only since 1930 that the home agreement covering small motors and D.C. generators has been in continuous operation; most of the other current Group agreements were introduced at various times between 1930 and 1946.‡

* See paragraphs 391 to 395 for an account of the discounts on sales of generators. As the oil engine maker is generally the main contractor, the discounts on sales of oil engines to generator makers are of little practical importance.

† See paragraph 400 for details.

‡ The following agreements have been in continuous operation from the dates mentioned:—

- Dynamo and Motor Agreement, 1930
- Dynamo and Motor (Export) Agreement, 1940
- Marine Motor and Generator Agreement, 1946
- Alternator Price Agreement, 1935
- Generator Price Agreement, 1936
- Large Dynamo and Motor Agreement, 1935
- Large Electric Machine Agreement, 1942

The Electrically Driven Rolling Mill (Electrical Parts) Notification Agreement appears to have been in operation since 1924 and the Electrically Driven Winding Engine (Electrical Parts) Notification Agreement since 1932. Although not formally completed until 1952, the price agreements (Electrically Driven Rolling Mill (Electrical Parts) Agreement and Electrically Driven Winding Engine (Electrical Parts) Agreement) for rolling mill and winding engine equipment had been in existence in skeleton since 1943 and had been observed in practice before 1952.

The Railway Traction Electrical Equipment Agreement and the Trolleybus Electrical Equipment Agreement (which do not provide for notification or price arrangements—see paragraph 417) were introduced in 1951 and 1950 respectively.