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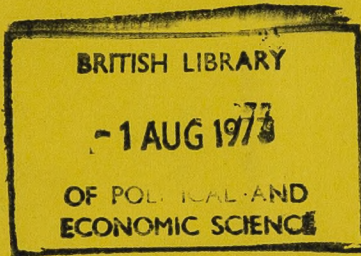
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Business Monitor

DEPARTMENT OF TRADE AND INDUSTRY
BUSINESS STATISTICS OFFICE



Report on the Census of Production 1970

C51 Metal-working machine tools

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Report on the Census of Production 1970

C51 Metal-working machine tools

Presented by the Department of Trade and Industry
to Parliament in pursuance of the Statistics of Trade Act 1947
(10 & 11 Geo. 6 Cha. 39 sec 7)

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C51 Metal-working machine tools

This report on the Metal-Working Machine Tools Industry relates to establishments engaged wholly or mainly in manufacturing machine tools and parts thereof including metal-cutting machine tools, boring, drilling, grinding and milling machines; lathes and other turning machines; machining centres; metal-forming machine tools, including forging machines and hammers, extrusion and other presses, wire-drawing machines and sheet metal-working machines; all types of electric and gas welding machinery and equipment, flame-cutting machines and welding electrodes and rods; physico-chemical progress cutting and forming machines including equipment for high energy rate forming, electrochemical machinery, ultrasonic erosion etc. Electron beams and lazer machines for metal working are included but rolling mills, portable power tools and metal manufacturing plant are excluded.

The industry corresponds to minimum list heading 332 in the Standard Industrial Classification (revised 1968) which was used for the first time as a basis of classification in the 1968 census, when it was reported as part 51. The definition of the industry is the same for the 1968 and 1970 censuses. The figures given for 1963 have been reclassified as far as possible according to the Standard Industrial Classification (revised 1968).

METHOD OF CLASSIFICATION

The standard procedure for classifying an establishment to an industry is described in the notes on page (iii). Certain modifications of the standard procedure were necessary, however, for this industry. References in the following paragraphs to returns are to those in the 1968 Census of Production where detailed product sales were available.

In classifying returns to this industry the value of unspecified work done (other than structural and installation work), including repair work, was not taken into account unless it amounted to 80 per cent or more of the total output of the return in which case the return was classified to General Mechanical Engineering (part C66). The amount charged for erecting and installing machinery and plant (other than air-conditioning, heating and ventilating plant) was treated as part of the selling value of these items in determining the industrial classification of returns. The standard classification procedure as outlined in the notes on page (iii) was further modified where a return would have been classified to one of the mechanical engineering industries relating to a specific class of machinery (viz. parts C50 to C66) but where the sales of the principal products of the industry concerned (including parts) accounted for less than 20 per cent of the total output: in such cases the return was classified to the General Mechanical Engineering Industry (part C66).

In interpreting the data in the tables it is essential to bear in mind the notes and definitions which commence on page (iii).

Table No	Title	Page
	Section I - Estimates for all United Kingdom establishments in the industry	
1	Net output, 1963, 1968 and 1970 - Establishments classified to the industry	C51.3
2	Capital expenditure and stocks, 1963, 1968 and 1970 - Establishments classified to the industry	C51.4
3	Analysis of establishments by size, 1970 - Establishments classified to the industry	C51.5
4	Percentage analysis of employees by age and sex, 1970 - Establishments classified to the industry	C51.6
5	Regional distribution of employment, net capital expenditure and net output, 1970 - Establishments classified to the industry	C51.7
	Section II - Analysis of returns received	
6	Analysis of net output of returns received from establishments employing 25 or more persons, 1963, 1968 and 1970	C51.8
7	Percentage analysis of twelve-month periods covered by returns from establishments employing 25 or more persons, 1970	C51.9

TABLE 1

Net output, 1963, 1968 and 1970

All United Kingdom establishments classified to the industry (a)

	Unit	1963	1968	1970
Enterprises	Number	437	548	628
Establishments (b)	"	553	672	687
Sales of goods produced and work done	£'000	164,484	217,183	305,367
Services rendered to other organisations (c)	"			
Goods merchanted or factored	"	31,525	31,243	28,934
Canteen takings	"			
Total sales and work done	"	196,009	248,426	336,187
Change during the year, goods on hand for sale	"	+ 297	+ 1,690	+ 2,149
Change during the year, work in progress	"	- 223	+ 7,972	+ 14,604
Gross output	"	196,084	258,087	352,940
Cost of purchases	"	84,163	112,009	166,942
Change during the year, stocks of materials, stores and fuel	"	- 1,007	+ 1,544	+ 7,766
Payments to other organisations				
for work done on materials given out	"	5,390	9,071	11,831
for transport by road	"	1,250	1,291	2,053
for transport by rail, water, air and Post Office parcel services (d)	"			
Total costs	"	91,810	121,143	173,685
Net output	"	104,274	136,945	179,254
Total employment (including working proprietors) (e)	Thousands	74.4	72.1	77.3
Net output per head	£	1,402	1,900	2,320

(a) Including estimates for establishments not making satisfactory returns and for establishments employing less than 25 persons.

(b) See definition of establishments in notes page (iii).

(c) Amounts charged for hiring out plant, machinery or other goods, for providing transport, or for any technical or other services rendered.

(d) For 1963 and 1968, payments for postal services are excluded.

(e) Average number of persons employed during the year.

TABLE 2

C51.4

Capital expenditure and stocks, 1963, 1968 and 1970

All United Kingdom establishments classified to the industry (a)

	1963	1968	1970 (b)
	£'000	£'000	£'000
Capital expenditure			
New building work	1,505	3,604	2,837
Land and existing buildings			
Acquisitions	428	241	1,358
Disposals	464	518	3,470
Plant and machinery			
Acquisitions	5,819	10,601	10,436
Disposals	373	941	1,281
Vehicles			
Acquisitions	727	1,241	1,496
Disposals	300	572	525
Total net capital expenditure (c)	7,342	13,657	10,850
Stocks and work in progress at end of year			
Materials, stores and fuel	18,700	31,666	40,674
Work in progress	38,667	52,337	71,532
Goods on hand for sale	14,786	23,090	22,464
Total stocks	72,153	107,093	134,670

(a) Including estimates for establishments not making satisfactory returns and for establishments employing less than 25 persons.

(b) Capital expenditure in respect of manufacturing establishments where production had not commenced before the end of the year, is included for 1970.

(c) Acquisitions less disposals.

TABLE 3

Analysis of establishment by size, 1970

All United Kingdom establishments classified to the industry (a)

Size group (b)	Enterprises (c)	Estab-lishments (d)	Total employment (b)	Employees		Wages and salaries		Wages and salaries per head		Total sales and work done (f)	Gross output	Net output	Net output per head	Capital expenditure (net) (g)	Total stocks and work in progress at end of year
				Operatives	Others (e)	Operatives	Others (e)	Operatives	Others (e)						
	Number	Number	Number	Number	Number	£'000	£'000	£	£	£'000	£'000	£'000	£	£'000	£'000
1-10	232	232	1,790	9,658	3,296	11,997	5,219	1,242	1,583	59,014	60,064	31,933	2,434	3,920	14,143
11-24	173	173	2,883												
25-49	49	49	1,862												
50-99	77	77	6,587												
100-199	50	53	7,605	5,265	2,319	6,997	3,587	1,329	1,547	34,931	36,633	17,232	2,266	2,521	11,447
200-299	26	38	9,213	6,086	3,125	7,932	4,876	1,303	1,560	38,356	40,769	21,368	2,319	1,337	15,666
300-499	27	30	11,857	7,993	3,864	10,608	5,870	1,327	1,519	57,772	61,155	29,958	2,527	1,291	24,254
500-749	16	19	11,532	7,653	3,872	10,035	5,636	1,311	1,456	49,882	52,937	25,228	2,188	1,615	22,765
750-1,499	8	11	12,301	8,079	4,213	10,349	5,919	1,281	1,405	49,715	52,235	26,751	2,175	954	24,983
1,500 and over	5	5	11,632	8,359	3,273	10,763	4,751	1,288	1,452	46,517	49,146	26,784	2,303	1,121	21,413
Total	628	687	77,262	53,093	23,962	68,681	35,858	1,294	1,496	336,187	352,940	179,254	2,320	10,850	134,670

(a) Including estimates for establishments not making satisfactory returns and for establishments employing less than 25 persons.

(b) Average number employed during the year (including working proprietors) by the establishment.

(c) The sum of the figures for the size groups exceeds the total for the industry to the extent that enterprises made returns for establishments in more than one size group.

(d) See definition of establishments in notes on page (iii).

(e) Administrative, technical and clerical employees.

(f) Including sales of goods merchanted or factored and canteen takings. Also includes services rendered to other organisations (amounts charged for hiring out plant, machinery or other goods, for providing transport, or for technical or other services rendered).

(g) Acquisitions less disposals.

TABLE 4

C51.6

Percentage analysis of employees, by age and sex, 1970 (a)
All United Kingdom establishments classified to the industry

Ages	Males	Females	All employees
	per cent	per cent	per cent
Under 18	3	1	4
18 and over	83	13	96
All ages	86	14	100.0

Source: Department of Employment

(a) The percentages relate to the numbers employed (excluding working proprietors) at mid-June, 1970.

TABLE 5

C51.7

Regional distribution of employment, net capital expenditure and net output, 1970
All United Kingdom establishments classified to the industry

Area	Average number employed (a)		Net capital expenditure (b)		Net output and employment in the region of establishments with more than 80 per cent of their employment in the region (c)		
	Thousands	per cent of United Kingdom	£'000	per cent of United Kingdom	Estimated net output £'000	Average number employed as a percentage of total average number employed in the region	Net output as percentage of total of the industry in the United Kingdom
Standard Regions of England							
North	4.1	5.3	1,601	14.8	10,321	95.4	5.8
Yorkshire and Humberside	9.8	12.7	1,627	15.0	16,726	80.6	9.3
East Midlands	7.1	9.2	1,757	16.2	13,715	82.7	7.7
East Anglia	1.8	2.3	160	1.5	1,212	32.3	0.7
South East	19.8	25.7	270	2.5	39,643	76.8	22.1
South West	2.6	3.4	906	8.3	4,470	73.4	2.5
West Midlands	21.2	27.5	2,321	21.4	39,288	81.8	21.9
North West	5.6	7.3	1,426	13.1	6,691	79.0	3.7
England	72.1	93.4	10,069	92.8	132,066	79.4	73.7
Wales	*	*	*	*	*	*	*
Scotland	3.6	4.7	536	4.9	6,764	86.2	3.8
Great Britain	*	*	*	*	*	*	*
Northern Ireland	*	*	*	*	*	*	*
Unallocated (d)	-	-	-	-	37,246	-	20.8
United Kingdom	77.3	100.0	10,850	100.0	179,254		100.0

(a) Including working proprietors.

(b) New building work plus acquisitions less disposals of land and existing buildings, plant and machinery and vehicles: including capital expenditure at establishments not yet in production.

(c) Where a census return covered addresses in two or more regions an estimate was made of the net output attributable to the region only where more than 80 per cent of the establishment's employees were located in the region. The estimate was made by assuming that net output at each address covered by a return was proportionate to employment at the address. The establishment's residual net output was included in unallocated net output.

(d) Includes estimates of net output for establishments not making satisfactory returns and establishments employing less than 25 employees, and unallocated net output of establishments covering addresses in two or more regions.

TABLE 6

C51.8

Analysis of net output of returns received from United Kingdom establishments employing 25 or more persons, 1963, 1968 and 1970

	Unit	1963	1968	1970
Enterprises	Number	211	205	186
Establishments (a)	"	325	317	235
Sales of goods produced and work done	£'000	157,380	206,464	251,469
Services rendered to other organisations (b)	"			883
Goods merchanted or factored	"	30,164	29,701	21,467
Canteen takings	"			394
Total sales and work done	"	187,544	236,165	274,213
Change during the year, goods on hand for sale	"	+ 284	+ 1,607	+ 1,574
Change during the year, work in progress	"	- 213	+ 7,578	+ 12,969
Gross output	"	187,615	245,350	288,756
Cost of purchases	"	80,528	106,481	137,229
Change during the year, stocks of materials, stores and fuel	"	- 963	+ 1,468	+ 6,445
Payments to other organisations				
for work done on materials given out	"	5,158	8,623	9,618
for transport by road	"	1,196	1,227	1,644
for transport by rail, water, air and Post Office parcel services (c)	"		300	487
Total costs	"	87,845	115,163	142,533
Net output	"	99,771	130,187	146,222
Total employment (including working proprietors) (d)	Thousands	71.2	68.5	63.3
Net output per head	£	1,402	1,900	2,309

(a) See definition of establishments in notes on page (iii).

(b) Amounts charged for hiring out plant, machinery or other goods, for providing transport, or for any technical or other services rendered.

(c) For 1963 and 1968, payments for postal services are excluded.

(d) Average number of persons employed during the year.

TABLE 7

C51.9

Percentage analysis of twelve-month periods covered by returns received from United Kingdom establishments employing 25 or more persons, 1970

Accounting year ended	Percentage of total returns received	Percentage of total numbers employed
	per cent	per cent
1970 April (a)	0.4	0.1
May	3.0	2.3
June	7.2	3.6
July	1.3	0.8
August	2.1	0.7
September	14.9	21.4
October	7.2	14.9
November	3.4	3.0
December	33.6	26.5
1971 January	4.7	5.6
February	0.9	0.1
March (b)	21.3	21.0
	100.0	100.0

(a) From 6th April.

(b) Including returns made for twelve-month period ending 1st to 5th April 1971.

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Notes

These notes give the main information needed for interpreting the figures in the industry reports, (more detailed information about the census is given in a separate booklet—"Introductory Notes", Part C1 of the Report on the Census of Production for 1970).

GENERAL INFORMATION

Changes compared with 1968

The questions asked in the 1970 census were similar to those in the 1968 census with certain exceptions. In particular the 1970 census returns did not ask for details of:—

- (i) purchases or sales by commodities
- (ii) payments of rates
- (iii) payments for repairs and maintenance
- (iv) costs of operating road goods vehicles.

The amounts payable to other organisations for transport of goods however, did include the cost of the Post Office parcel services.

Other changes concern the treatment of firms employing less than 25 persons and the rules used for classifying establishments to industry. Any such changes are explained in the following paragraphs, or in the introductions to the industry reports, or by footnotes to the tables.

Industrial classification

Establishments were classified to industries on the basis of major activity in conformity with the third edition of the Standard Industrial Classification (Revised 1968). Normally an establishment was classified to an industry if its sales of the principal products of that industry accounted for a greater proportion of its total sales than in its sales of the principal products of any other industry. Classification of an establishment in this census was based on the establishment's return to the Census of Production, 1968.

Establishments added to the register subsequent to the 1968 census were classified on the basis of the description of the business given by the respondent.

Coverage

Detailed census returns were generally sought only from establishments employing on average 25 or more persons, but in industries where firms employing less than 25 persons account for a relatively high proportion of total employment and output the exemption limit was lowered to 11. Census returns were also sent to establishments whose employment was not known to the Business Statistics Office at the time of despatch; if their employment was below the exemption limit for their industry establishments were asked to supply figures only of total employment and total sales.

TERMS USED IN THE CENSUS REPORT

Average number employed

Establishments were required to state the number of persons on the payroll (i.e. whose national insurance cards were held by them) on the average during the year of return, whether full time or part time employees. Separate figures were required for (a) administrative, technical and clerical employees and (b) all other employees (operatives). Averages could be calculated from figures relating to the last week of each calendar month. Establishments were also required to state the number of working proprietors where appropriate and these are included in total employment figures. Outworkers (i.e. persons employed by establishments who worked in their own homes etc. on materials supplied by the establishments) are excluded.

The figures include persons engaged on merchandising or factoring and canteen workers where particulars in respect of these activities could not be excluded from the return.

Working Proprietors

These include all persons regarded as "self employed" for national insurance purposes and members of their families who worked in the business without receiving a fixed wage or salary; but such persons who worked less than half the normal number of working hours are excluded. Directors working in the business but not in receipt of a definite wage, salary or commission are included under this heading; directors paid by fee only are not included.

Employees

Administrative, technical and clerical employees include managing and other directors in receipt of a definite wage, salary or commission, managers, superintendents and works foremen; research, experimental development, technical and design employees (other than operatives); draughtsmen and

tracers; editorial staff, staff reporters, canvassers, competition and advertising staff; travellers; and office (including works office) employees.

Operatives include all other classes of employees, that is, broadly speaking, all manual wage earners. They include those employed in and about the factory or works; operatives employed in power houses, transport work (including roundsmen), stores, warehouses, shops and canteens; inspectors, viewers and similar workers; maintenance workers, and cleaners. Operators engaged in outside work of erecting, fitting etc. are also included, but outworkers are excluded.

Capital expenditure

(a) New building work

This represents the cost incurred during the year of new building and other constructional work (including office buildings, canteens and the like used in connection with the business covered by the return, but not dwelling houses for employees). The value is that charged to capital account during the year of return; it includes expenditure on new buildings or on the extension or reconstruction of old buildings, the value of works of a capital nature carried out by the establishment's own staff and the cost of any newly constructed buildings purchased. Figures shown include any legal charges, stamp duties, agents' commissions, etc.

(b) Land and existing buildings

The items shown are the capital cost of freeholds purchased and the capital cost of premium payable for leaseholds acquired (excluding the value of any assets acquired in taking over an existing business), and the amounts receivable for any freeholds or leaseholds disposed of. The value is that charged to capital account during the year of return.

(c) Plant, machinery and vehicles

The items shown are the value of plant and machinery and of vehicles acquired, both new and second-hand, and the amount received for items disposed of during year. The value of plant and machinery acquired includes plant, etc., which firms produced for their own use in connection with the business covered by the return. The value of plant, etc., acquired is the expenditure charged to capital account during the year of return less any discounts received, but including the cost of transport and installation. No deduction is made for depreciation, amortization or obsolescence. The proceeds of items disposed of during the year exclude amounts written off for items scrapped.

Capital expenditure during the year in respect of manufacturing establishments where production had not started before the end of the year is excluded from the figures for both 1963 and 1968 but is included in the figures for 1970.

Enterprise

The term enterprise is used in this report to mean one or more establishments under common ownership or control. An enterprise normally consists of a single establishment, more than one establishment owned by the same firm, or a number of establishments owned by a parent company and its subsidiary companies. Information about the relationship between constituent companies of enterprises was obtained mainly from published sources such as the Stock Exchange Year Book supplemented by information from company reports and information supplied by establishments. The information available is not complete but covers the largest and most important groups of industrial establishments and is believed sufficient to provide a worthwhile basis for analysis.

Establishment

The definition of the establishment differed between the Censuses for 1963, 1968 and 1970. The definitions used were as follows:—

1963: the establishment was normally the premises under the same ownership or management at a particular address.

1968: the establishment was defined, in accordance with Standard Industrial Classification (Revised 1968), as being the smallest unit which could provide the information normally required for an economic census, for example, employment, expenses, turnover and capital formation. Sometimes activities which are conducted as a single business are carried on at a number of addresses. In 1968 where the activities of such a business were closely integrated and the addresses, termed local units, were in close proximity the establishment was defined to cover the combined activities and a single return was accepted. When the activities were closely integrated but the addresses were not in close proximity a combined return was accepted but the individual addresses were treated—in the count of establishments in an industry, for instance—as separate establishments.

1970: the practice of treating as multi-unit establishments those businesses with closely integrated activities at a number of addresses in close proximity was extended to all those businesses where the local units were at more than one geographical location and detailed census information was not available for each unit. Separate figures were obtained, however, of employment and capital expenditure at each unit. The effect of this change is to reduce somewhat the number of establishments as compared with 1968.

Gross output

Gross output measures the total value of production (including work done) by establishments during the year. It is calculated as follows:—

Value of sales and work done
Plus/Less: Increase/decrease in value of stocks of goods on hand for sale
Plus/Less: Increase/decrease in value of work in progress
= Gross output.

Net output

Net output represents the value added to materials by the process of production (including the margin on selling any merchanted or factored goods). It is calculated as follows:—

Gross output
Less: Purchases adjusted for change in value of stocks of fuel and raw materials
Less: Payments for work given to other establishments
Less: Payments for transport
Less: Net amount of any duties, subsidies, allowances and levies payable
= Net output.

Net output per person employed

The figures of net output per person employed are derived by dividing the net output by the average number of persons employed (full time and part time) on all activities covered by the returns, including operatives, administrative, technical and clerical employees and working proprietors, but excluding outworkers.

Purchases

Purchases include the cost of materials and components bought for use in production; of fuel and electricity for all purposes; of packaging materials including the cost of returnable cases and containers when first purchased; of workshop materials, office materials and materials for repairs to establishment's own buildings, plants and vehicles when carried out by their own work people included in the returns; of consumable tools; and of parts for machinery purchased during the year as replacements. Water charges are also included. In general, purchases of goods for merchanting or factoring and canteen supplies are included. Materials supplied by customers for processing are excluded, as are all purchases charged to capital account.

The values shown include any duty paid (less rebate, etc.) but exclude trade discounts allowed. The cost of transport is included only if included in the cost of materials as invoiced; amounts paid to transport organisations, including an establishment's own separate transport organisations for delivery of materials and fuel are, therefore, excluded. Materials purchased overseas are included at the c.i.f. cost plus any duty payable if the cost of transport from the docks was not included in the invoiced price, but at their full delivery cost if invoiced "carriage paid home". Materials and fuel transferred from another department of the establishment not covered by the same return are included at the estimated selling value recorded by the other department.

Sales

Sales are in respect of goods made by the business covered by the return, goods made for it by outworkers or by other establishments from materials given out to them (sometimes described as goods made on commission) and waste products. Any machinery or other capital items produced for use in the business covered by the return are included, the value being that adopted in the establishment's asset accounts. Goods sold without being subjected to any manufacturing process (i.e. merchanted or factored) and canteen takings are included.

The value shown for sales is the net selling value, defined as the amount charged to customers whether on an ex-works or delivered basis excluding any trade discounts, agents' commissions, allowances for returnable cases, purchase tax, etc.; the net amount charged for packaging materials is included. Goods charged on a delivered basis to customers overseas are included at the f.o.b. value.

Goods produced in one establishment and transferred to another establishment of the same firm not covered by the return were treated as sales by the producing establishment and valued as far as possible as if they had been sold to an independent purchaser. Goods transferred to wholesale or retail selling organisations for which separate accounts were kept were valued on the same basis.

To the extent that sales of finished products of one establishment constitute the materials purchased by another, total figures of the value of sales (and of materials and fuel purchased) include an element of duplication. In some industries, e.g. motor vehicle manufacturing, and woollen and worsted, this duplication is substantial; and aggregates of the figures for a number of industries contain significantly greater amounts of duplication. For work done on commission, sub-contract work, etc., the value shown is the total amount charged for the work, including the value of any materials bought and used in such work.

Services rendered

This represents the amounts charged for hiring out plant, machinery and other goods, providing transport, or for any technical or other services rendered to other organisations. It includes amounts credited for similar services rendered to other establishments of the same enterprise not covered by the return.

Standard Industrial Classification

Industry classification is based on the Standard Industrial Classification (Revised 1968). It is published by H M Stationery Office together with a separate index in the form of an alphabetical list of industries.

Stocks and work in progress

Values are given of stocks of goods on hand for sale, and of materials and fuel, at the end of the year of return, including any stocks of goods held for merchanting or factoring. Values of the change during the year are also shown. The values include duty in the case of dutiable goods held out of bond.

The value of work in progress at the end of, and the change during, the year are also usually shown. This excludes any progress payments made to sub-contractors, and no deduction is made on account of progress payments received.

Transport payments

These represent the total amount paid or credited during the year for both outwards transport of finished goods sold and inwards transport of materials and fuel purchased. They include payment to other establishments, and to any separate transport organisation of the same establishment not covered by the return, but exclude the value of transport services provided by the business covered by the return. The items included are payments for hired cartage and for inwards and outwards carriage by all forms of inland transport, i.e. railways, road haulage, canals, coastwise shipping, air, etc. Payments made for sea and air freight on goods sold to customers overseas and on materials and fuel purchased from overseas suppliers are excluded.

Wages and salaries

These are amounts paid during the year to operatives and to administrative, technical and clerical employees. Payments to working proprietors, whether called salaries or not, are excluded. The values shown include all overtime payments, bonuses and commissions, whether paid regularly or not, and no deduction is made for income tax, insurances, contributory pensions, etc. The value of any payments in kind, travelling expenses, lodging allowances, etc. and employers' contributions to national insurances and pension schemes is excluded.

Work given out

The figures shown represent the total amount paid for work done by other establishments (whether part of the same enterprise or not) on materials supplied to them. They do not include payments to individual outworkers or payments for business and other services.

SYMBOLS USED

The following symbols are used throughout the report:

- .. not available,
- nil or negligible (less than half the last significant figure)
- * figures cannot be shown owing to risk of disclosing information about individual enterprises.

ROUNDING OF FIGURES

Figures in the tables have, where necessary, been rounded to the nearest final digit; there may, therefore, be apparent slight discrepancies between the sums of the constituent items and the totals shown.

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