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MOTOR VEHICLE PRODUCTION: DEPTH CLASSIFICATION: A DEMONSTRATION.

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Works out a scheme for the depth classification of the subjects going with the Basic Subject Motor Vehicle Production . Describes 14 steps in the design of the schedule, demonstrating the use of the principles, postulates. and devices of classification. Each step is considered in four parts: Objective, Background knowledge and preparation, Result, and Verification. Gives a list of 9 selected micro documents classified according to the scheme. Demonstrates a new method of presenting the Feature Headings, and comments on the results.

ABBREVIATIONS USED

(A1)	= Array of Order 1	(IN)	= Isolate Number(s)
(A2)	= Array of Order 2	[P]	= Personality Facet
(A3)	= Array of Order 3	[1P1]	= [P] of Round 1, Level 1
(AD)	= Alphabetical Device		
(AIN)	= Array Isolate Number(s)	(QI)	= Quasi Isolate(s)
		T	= Telescoping of
(BC)	= Basic Class(es)	*T* 1	= Telescoping 1 of
(BS)	= Basic Subject(s)	*T* 2	= Telescoping 2 of
(CN)	= Class Number(s)	..	.. ..
(FC)	= Fundamental Category(ies)	*T* 20	= Telescoping 20 of

0 INTRODUCTION

01 METHODOLOGY FOR THE DESIGN OF DEPTH SCHEDULES

In November 1963 a method for the design and development of schedules for the depth classification of subjects going

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with a (BS) was formulated (12). About a hundred depth schedules for the classification of subjects going with about 500 different (BS) have since been constructed. This work has demonstrated the helpfulness of the new methodology. In this process and in teaching and guiding the students in the DRTC Course, some experience has been gained in the practical step-by-step procedure for the design and development of depth schedules particularly for subjects going with the (BS) in Commodity Production Engineering. A few empirical principles have also been formulated as guide lines for the work involved in some of the steps.

02 Scope of the Paper

In the present paper, a stepwise procedure for the design of a depth schedule for the classification of subjects going with a (BS) in Commodity Production Engineering is described. For this purpose, the construction of a schedule for the depth classification of subjects going with the (BS) Motor Vehicle Production is taken as a case study. The procedure is described in fourteen steps. Each step consists of the following parts:

1 Objective;
2 Background knowledge and preparation;
3 Result; and
4 Verification.

1 STEP 1

10 Objective

To choose a Scheme for Classification that is suitable for adaptation to depth classification.

11 Background Knowledge and Preparation

111 Species of Schemes for Classification

Schemes for Classification have been categorised into the following species:

1 Purely enumerative;
2 Almost enumerative;
3 Almost faceted;
4 Rigidly faceted; and
5 Freely faceted.

It has been shown that the Freely Faceted Classification is the most suitable for adaptation for depth classification (16).

112 Facet Structure

A Freely Faceted Classification is based on postulates and principles for the three planes of work — Idea Plane, Verbal Plane, and Notational Plane. In an *a priori* approach to the

design of such a scheme for classification, we may think of the possible subjects likely to arise by the attachment of various kinds of isolates to a particular (BS). This is based on the Consolidated Postulate about a Subject (15). The isolates will be manifestations of any of the Five (FC) in any Round and in any Level. Thus, thinking about all the possible subjects in this way is a help in the design of a Scheme for Classification. The range of subjects going with a (BS) may have at one extreme the bare (BS) and at the other extreme a subject with any number of facets which are manifestations of all the five (FC) and in any of the Rounds and in a number of Levels. The subject at the first extreme does not require for its classification the help of any schedule other than that of the (BC). For, its class is the (BC) itself. On the other hand, the subject at the other extreme will have to be represented by a Generalised Facet Structure (26), to comprehend the totality of the facets that a micro subject may present.

113 REDUCTION IN WORK

1131 Common isolates

It will not be necessary to construct *de novo* a schedule for each of the facets of the compound subjects going with particular (BS). For instance, the isolates in the Space Facet and in the Time Facet will be common to many subjects. Therefore, the schedules for each of these facets can be constructed for a scheme as a whole. Similarly, the schedule of Anteriorising Common Isolates, the schedule of Posteriorising Common Isolates, and the schedule of Common Value Isolates can also be constructed for the scheme as a whole. Therefore, we have to consider in particular about the construction of the schedule of Special Isolates in the Personality Facet, in the Matter Facet, and in the Energy Facet of any Round and of any Level.

Special Energy Isolates for each (BS) have been found to be a few. The work on Common Energy Isolates indicates that such Special Energy Isolates will be largely made up of Quasi Common Isolates. These can be determined by the Principle of Seminal Equivalence.

The Special Matter Isolates for each (BS) have also been found to be a few. Matter Isolates are deemed to be of two kinds: Matter (Material) and Matter (Property), each constituting a Level of the (FC) Matter. Each of these kinds of isolates turns out to be largely Common Isolates. It may be possible to draw up schedules for Common Matter Material and Common Matter (Property). The number of isolates in the former schedule will be quite large (estimated at 10^{10}) as compared to the estimated 2,000 or 3,000 isolates in the schedule for the latter. However,

once these schedules of Matter Common Isolate are drawn up, any Special Matter Isolate required for the subjects going with a (BS) can be determined just as in the case of Special Energy Isolates. It has also been found that the number of isolates in each of the schedules of Special Energy Isolates and of Special Matter Isolates does not increase rapidly.

1132 Special Isolates in [1P]

But the isolates in the Personality Facet will be largely different with each (BS). The number of relevant characteristics to be used as the basis for designing the schedule of these Special Isolates will be fairly large. The number of Levels in the Personality Facet in Round 1 will be more than one. Further, the isolates in [1P1] change at a faster rate, new isolates being required to accommodate subjects arising as a result of the rapid developments in the universe of subjects. Therefore, the isolates in [1P1] will be the most numerous. They also usually have the greatest literary warrant.

Thus, the isolates in [1P] are the most important ones for enumeration. Even here, those in [1P1] should receive first consideration. Therefore, we should preferably begin with the construction of schedules of Special Isolates in [1P1], then in [1P2], and so on.

12 RESULT

On the basis of the discussion in Sec 11 to 1132, we have the following results:

1 The Freely Faceted species of classification will be the most helpful one for adaptation in the design and development of a scheme for classification of the subjects going with the (BS) 'Motor Vehicle Production'.

2 The steps in the design described in the succeeding sections will be largely confined to the schedule of isolates in [1P1].

3 The principles and postulates already formulated and embodied in the *Prolegomena to library classification* (18) may be used in the design and development of the schedule.

2 STEP 2

20 OBJECTIVE

1 To arrive at an adequate definition of the term 'Motor Vehicle' and of the related terms.

2 To ascertain the scope of the subject-field "Motor Vehicle Production" and its divisions.

3 To study the developmental history of the subject field "Motor Vehicle Production" with a view to gaining sufficient

knowledge of the highways and byways of the subject — that is, to sense the landmarks in the evolution of the subject as a whole and of its divisions, and the present trend of research thereof.

21 BACKGROUND KNOWLEDGE AND PREPARATION

211 Consultation of the following kinds of documents may be helpful to achieve the objectives mentioned in Sec 20.

1 Standard technical dictionaries;
2 Current technical glossaries of the subject;
3 Standards on the nomenclature of the subject;
4 Articles on the subject in general encyclopaedias;
5 Articles in special encyclopaedias devoted to the subject;
6 Orientation books;
7 Books on the history of the subject;
8 Treatises on the subject; and
9 Good review articles and trend reports on the subject.

For example, in regard to Motor Vehicle Production, consultation of the appropriate sections in the following documents was found helpful:

1 Encyclopaedia Britannica. 1965. 25 V.
2 World book encyclopaedia. 1962. 20 V.
3 International encyclopaedia of science. 1965. 4 V.
4 McGraw-Hill encyclopaedia of science and technology. 1960. 15 V.
5 Mechanical engineers' handbook. Ed 6. 1958.
6 S A E handbook. 1962.
7 SAE J687. Standard on commercial motor vehicle nomenclature. 1953.
8 Heldt (P M). Automotive chassis without power plant. 1952.
9 Crouse (W H). Automotive transmissions and power trains. Ed 2. 1959.
10 Review articles in the *SAE journal* and other periodicals on Motor Vehicle.

212 PROFORMA

A proforma that has been found convenient for recording the results of the consultation of the documents is given below:

1 Meaning of the term (up to three differentones)
  11
  12
  13
2 Terminology (with remarks, if any).
3 Scope of the subject (general).
4 Main divisions and subdivisions with their meanings and scope.

5 Special classification, if any.
6 Penumbral subjects.
7 Remarks on special points.
8 Important reference books in the subject.
9 List of documents from which information was collected, with indication of location (library, etc) against each document.

22 RESULT

221 DEFINITION

Vehicle.—A single conveyance on wheels.

Motor vehicle.—A vehicle that is self-propelled or drawn by mechanical power. It is used for passenger transportation (motor car, bus, motor cycle, motor scooter) or for hauling freight (truck). It is designed for operation on highways or natural terrain.

Motor truck.—A single self-propelled motor vehicle carrying its load on its own wheels. It is primarily designed for the transportation of goods.

Truck trailer.—A commercial motor vehicle with or without auxiliary motive power. It is designed to be drawn by a truck or by a tractor.

Truck tractor.—A motor vehicle designed primarily for drawing truck-trailer and constructed to carry part of the weight of the load of a semi-trailer.

The above definitions are from the SAE standard (29).

222 DEVELOPMENTAL HISTORY

It is estimated that today some eighty-five million passenger cars travel on the world's roads. In the United States alone, the road mileage covered by the passenger cars in a day equals a distance of nine round trips to the sun. The advent of the motor vehicle has greatly changed the mode of living of the people in many countries. For example, it has influenced town planning, location of houses, the kinds of houses built, the construction of highways, the way people earn a living, the way leisure time is spent, and even the food habits of the people. It has helped more people to see more of the world comfortably and easily.

Many men in many countries have contributed to the development of the motor vehicle. The earliest types of motor vehicles were steam-powered, slow-moving, cumbersome, jolting, and noisy, frightening people and animals off the road. In 1836, the electric-powered vehicle was introduced. By 1900, it became quite popular; for, it used silent motors and did not give off poisonous fumes. One particular disadvantage of the electric car was that it could travel only about a hundred miles before

its battery had to be re-charged. The 'electric car' soon gave way to the petrol engine-powered car. The petrol engine used in the modern car was developed in Europe. Although the petrol engine-powered car had been introduced as early as 1863, it was only after Daimler and Benz in 1885 built motor vehicles powered by naptha, the production of modern type of motor cars came to be established.

In the last quarter of a century the trend has been to produce cars with greater speed, and designed for greater safety, better controls, and comfortable motoring.

Some of the landmarks in the development of the production of Motor Vehicles are listed below (1 and 30):

Year	Person or Organisation	Contribution
c1678	Ferdinand Verbiest (Jesuit missionary in China)	Working model of a steam-powered car
1769	Nicolas Joseph Cugnot (French army officer)	One of the first full-size, self-powered road vehicle; speed 2 mph
1801	Richard Trevithick (Great Britain)	Crude steam-powered carriage; average speed of 15 mph
1805	Oliver Evans (United States)	First American motor vehicle; operated on land and water.
1829	Goldworthy Gurney (Great Britain)	Steam-powered carriage; average speed of 15 mph
1836	Thomas Davenport (United States)	Working model of an electricity-powered vehicle
1850s		Opposition to the steam-powered vehicle named 'snorting monsters', from people as well as from railway and stage-coach services
1864	England	Red Flag Law
1864	Jean Joseph Etienne Lenoir (France)	Single-cylinder engine powered by street lighting gas
1879–1911	George B Selden (US Attorney)	Patent for a road vehicle design
1885	Gottlieb Daimler (German)	Two-wheeled motor cycle powered by a light 4-cycle petrol engine
1893	Charles E Duryea and J Frank Duryea	First successful petrol-powered car in the USA

Year	Person or Organisation	Contribution
1896	Charles Brady King Henry Ford Alexander Winton Ransom Eli Olds	Detroit becomes the "Automobile capital" of the USA. Assembly-line production begins. Trend: Precision manufacturing; interchangeable parts; mass production
c1898	Louis Renault (French motor vehicle manufacturer)	Introduced shaft drive
1911	Charles F Kettering	Electric self-starter
1914 (World War I)	Joseph Simon Gillieni (Military Governor of Paris)	Formed the famous "Taxicab army" to stop the German advance, and changed the course of war
1920s		Essex car with closed body
1920–40	USA	Balloon tyres; safety glass; lacquer finish; sealed-beam headlight; no-draft ventilation; independent wheel suspension; automatic transmission
1945	USA	Longer, wider, and lower cars; wrap-around wind shield; rear windows of one-piece glass curving around the sides of the car. High horse power engine. Comfort: Air conditioning, power-adjustable seats, push-button window
1950s		Gas-turbine-powered car
1959	Curtiss-Wright Corp	Car without wheels, riding on a cusion of air
1960		Compact-car becomes popular

3 STEP 3

30 OBJECTIVE

To choose the Basic Class or Basic Classes with which the subjects in Motor Vehicle Production may be deemed to go.

31 BACKGROUND KNOWLEDGE AND PREPARATION

The Postulate of Basic Facet [14] requires that each subject should have a (BC). In Sec 112, it has been pointed out that a subject in Motor Vehicle Production may require only the (BC)

to represent it, while another in the same subject-field may require the attachment of several isolate facets to the (BC) to represent it. A Freely Faceted Scheme for Classification may give a scheme of (BC). A depth schedule may be developed for the subjects going with any one or group of (BC). If the (BC) for the subjects in Motor Vehicle Production has not already been enumerated, it is to be derived from the appropriate Main Class or (BC). There are very few guiding principles [3] available for the derivation of a (BC). A study of the documents mentioned in Sec 21 will be of help in such derivation of the (BC). A knowledge of the application of the Principles for Filiatory Sequence is necessary for the interpolation of new (BC) in the filiatory sequence in the schedule of (BC).

32 RESULT

321 BASIC CLASS IN "D ENGINEERING"

The first few (BC) in the revised schedule of (BC) for "D Engineering" occurring in (A1) in CC are as follows:

D Engineering
D6 Power production
D7 Service production
D7Z Commodity production
D91 Vehicle production

Tel (A2) *into* (A1) *begins*
D92 Land vehicle production

Tel (A3) *into* (A2) *begins*
D93 Power-drawn vehicle production
D936 Mechanical-power-drawn vehicle production
Tel (A3) *into* (A2) *ends*
Tel (A2) *into* (A1) *ends*

322 BASIC CLASS FOR "MOTOR VEHICLE PRODUCTION".

The (BC) "D96 Mechanical-power-drawn vehicle production" is subdivided into the following (BC):

D936 Mechanical-power-drawn vehicle production

Tel (A4) *into* (A3) *begins*
D93B Motor vehicle production

Tel (A5) *into* (A3) *begins*
D93C Passenger-carrier-motor vehicle production
D93C1 Motor car (automobile) production
D93C2 Motor-bus production
D93C5 Motor-cycle production

D39C6 Motor-scooter production
D93C8 Moped production
D93D Freight-carrier-motor vehicle production
D93D1 Motor truck production
D93D3 Truck-trailer production
Tel (A5) *into* (A3) *ends*
Tel (A4) *into* (A3) *ends*

323 VERIFICATION

The divisions of the (BC) "Motor Vehicle Production" are in conformity with the primary classification of vehicles generally adopted by the majority of Motor Vehicle Production engineers.

The sequence of the (BC) under each of the (BC) "Passenger-carrier-motor vehicle production" and "Freight-carrier-motor vehicle production" conform to the Principle of Later-in-Evolution (13).

The schedule worked out in this paper is generally applicable for the classification of subjects going with each of the (BC) enumerated above, except

D93C5 Motor cycle production
D93C6 Motor scooter production
D93C8 Moped production

4 STEP 4

40 OBJECTIVE

To ascertain the oft-recurring First Characteristics for use as (QI) in [1P1], in the majority of the documents of optimum intention on the subjects going with the (BS) Motor Vehicle Production. (This step belongs to the Idea Plane).

41 BACKGROUND KNOWLEDGE AND PREPARATION

1 Some prior knowledge of the subject is necessary to begin with. In particular, a knowledge of the state-of-art and of the highways and byways of the subjects going with the (BS) Motor Vehicle Production is to be obtained.

2 In the *a priori* approach, to begin with, such knowledge of the history, the development, the state-of-art, and the trend in the subject, was obtained from a study of the documents mentioned in Sec 211.

3 In the pragmatic approach, the First Characteristics were ascertained by perusing as many assorted recent micro documents on the subject as possible. About five hundred micro documents, including the specifications on the subject of Motor Vehicle published during the period 1963 to 1966, were examined. Of these, about two hundred were found helpful to pick out the First Characteristics to be used as (QI) in [1P1].

4 In order to make the design work as productive as possible, particularly in the later stages, the following records were also made at this stage:

41 A main entry was prepared on a 75 × 125 mm slip according to an accepted cataloguing code such as the *Classified catalogue code* for each of the micro documents on Motor Vehicle Production, selected as relevant for our purpose.

42 In each entry, the Kernal Terms taken from the document concerned were also noted, together with an indication against each the (FC) of which the idea represented by it was deemed to be a manifestation.

43 An abstract was added to the entry, wherever necessary.

44 The isolates picked up while perusing the documents — macro as well as micro documents — were each noted on a separate 75 × 125 mm slip. The following items of information were also noted on each of the slips in the sequence mentioned:

1 The context in which the isolate occurs in the documents deemed to be relevant to the subject Motor Vehicle Production;
2 The standard term;
3 The definition(s) of the term;
4 The source-document from which the definition was taken;
5 A reference to the main entry for the document from which the term was picked up; and
6 The name of the (QI) on the basis of which the isolate may be derived in the context of the subject Motor Vehicle Production.

45 A specimen of the entry in the slip for the record of information about an isolate is given below:

DRAY BODY
1 Type of construction of the body of a truck/trailer
2 Camel back
3 Body of a truck/trailer with the floor curving down to the rear.
4 SAE J687 Standard
5 35
6 By Type of body

5 The First Characteristics for use as (QI) in [IPI] for the subjects going with the (BS) Motor Vehicle Production were selected by blending the *a priori* and the pragmatic approaches mentioned above.

6 Each of the relevant (QI) was noted on a separate slip. Under each (QI), a few of the isolates that may be derived on its basis were also noted. This was found helpful in the subsequent step of arrangement of the (QI) in a helpful sequence. For, the isolates served as a sort of "definition by enumeration" for the (QI).

42 Result

Some of the possible (QI) for use as the basis for the classification of the subjects going with the (BS) Motor Vehicle Production and its sub-classes in [IP1] are given in Table 1 in Sec 421.

Note.—To save space, the list of unverified and unarranged (QI) is not given in this paper.

421 Table 1. List of quasi isolates

SN	Sector (S —)	Quasi Isolate	SN	Sector (S —)	Quasi Isolate
a	b	c	a	b	c
1–3	(A)	By Brand	18		By Physiography
1		By Company			
2		By Model	19		By Altitude
3		By Year	20		By Latitude
4	(1)	By Make (Country)	21		By Gradient climb
5–21	ZA	By Purpose	22–31		By Design parameter for whole vehicle
5		By Service			
6		By Service area			
7		By Portability	22–23	Za	By Weight
8		By Mass communication use	22		By Vehicle weight
9		By Funeral use	23		By Weight distribution
10		By Medical/ Hospital use	24–27		By Dimension
11		By recreational use	24		By Overall length
12–13		By Cargo transport	25		By Overhang
12		By Cargo	26		By Overall width
13		By Weight	27		By Ground clearance
14		By Animal transport	28–29		By Speed
15–16		By Passenger transport	28		By Mean maximum speed
15		By Passenger			
16		By Number	29		By Maximum speed in each gear
17–21	Z1 to Zz1	By Environment adapted to			
17		By Weather	30–31		By Acceleration

SN	Sector (S –)	Quasi Isolate	SN	Sector (S –)	Quasi Isolate
a	b	c	a	b	c
30		By Acceleration from standing to ¼ mile	58		By Brand
			59		By Kind
			60–61		By Oil filter
			60		By Brand
31		By Acceleration through gears	61		By Kind
			62		By Combustion chamber
32–137		By Design parameter of organs	63		By Valve gear
			64		By Ignition
32–34		By Power system	65		By Cooling
32		By Equipment	66–70	9ZA	By Frame
33		By Voltage	66		By Construction
34		By Current	67		By Profile
35–65	A	By Engine	68		By Kind
35		By Kind	69		By Articulation
36		By Brand	70		By Material
37		By Mounting	71–91		By Cargo body
38		By Supercharging	71–73		By Truck trailer
			71		By Kind
39		By Power	72		By Axle assembly
40		By Thrust			
41		By Maximum torque	73	9Z1	By Number of axles
42		By Compression ratio	74	9A	By Constructional type
43		By Cycle	75–84		By Purpose
44–46		By Cylinder	75		By Special purpose body
44		By Number			
45		By Bore	76		By Body for miscellaneous freight
46		By Arrangement			
47		By Displacement	77		By Body for carrying passengers
48		By Stroke			
49		By Fuel			
50–61		By Fuel injection system	78		By Body for food
50–56		By Carburetor	79		By Body for liquids
50		By Number			
51		By Brand	80		By Body for livestock
52		By Draught			
53		By Number of barrels	81		By Body for garbage
54		By Number of venturi tubes	82		By Body for vehicles
			83		By Body for construction and repair equipment
55–56		By Choke			
55		By Brand			
56		By operation			
57		By Method of injection	84		By Body for building equipment
58–59		By Fuel pump			

SN	Sector (S –)	Quasi Isolate	SN	Sector (S –)	Quasi Isolate
a	b	c	a	b	c
85	91	By Material	122		By Number of revolutions
86	9zA	By Length			
87		By Width	123–125		By Rim
88		By Height	123		By Material
89		By Floor area	124		By Width
90		By Capacity	125	z91 to z9a	By Fixing
91	9z1	By Number of decks	126–137		By Tyre
92–96		By Seat	126	z1	By Brand
92	9a	By Number	127	zzA	By Kind
93		By Position	128		By Material
94		By Kind	129		By Fabrication
95		By Cover			
96		By Cover of head lining	130		By Maximum load
97–99		By Door	131		By Overall diameter
97		By Number			
98		By Position	132		By Static load radius
99		By Operation			
100–104		By Window	133	zz1	By Size
100		By Number	134	zza	By Weight of casing
101		By Position			
102		By Material			By Inflation pressure (alternative to 219–221)
103		By Curvature			
104		By Operation			
105–106		By Roof			
105		By Kind	135–136		By Traction characteristic
106		By Material			
107–108	1	By Suspension			
107		By Position	135		By Air resistance
108		By Kind			
109–114		By Spring	136		By Total air-and-rolling resistance
109	zZA	By Material			
110–112	zA	By Shape			
110		By axial load			
111		By torsion	137–216		By Operation-associated characteristic
112		By bending			
113		By Length			
114		By Rate of spring	137–152	za	By Transmission
			137–142		By Gear box
115		By Control	137		By Drive
116–137		By Wheel	138		By Type
116		By Position	139		By Number of speeds
117		By Number			
118		By Number of driving wheels	140		By Number of auxiliary speeds
119		By Wheel base	141		By Gear ratio
120		By Alignment	142–144		By Final drive
121		By Track	142		By Kind of gearing

SN	Sector (S –)	Quasi Isolate	SN	Sector (S –)	Quasi Isolate
a	b	c	a	b	c
143		By Arm	174		By Electrical power
144		By Gear ratio			
145		By Rear axle	175		By Fuel
146		By Kind of shift	176		By Temperature
147		By Method of transmission	177		By Speed
148–152		By Clutch	178		By Time
148		By Brand	179–187		By Light
149–152		By Disc	179		By Number
149		By Number	180		By Brand
150		By State	181		By Purpose
151		By Diameter	182		By Position
152		By Engagement	183		By Power
			184		By Shape
153–160	a	By Steering system	185		By Contour of reflector
153		By Brand			
154		By System			
155		By Steering gear	186		By Filament
156		By Linkage	187		By Operation
157		By Gear ratio	188		By Safety device
158		By Rotation of steering wheel	189–205		By Facility and comfort accessory
159		By Number of turning circles, lock-to-lock	189–194		By Baggage accommodation
160		By Diameter of turning circles	189		By Position
			190		By Fixity
161–173		By Brake system	191		By Length
161		By Brand	192		By Width
162		By Purpose	193		By Height
163		By Assistance	194		By Capacity
164		By Relation to wheel	195–199		By Ventilation and heating
165		By Construction			
166–168		By Shoe	195–197		By Purpose
166		By Number	195		By Climatic control
167		By Kind			
168		By Width	196		By Heating
169		By Brake-pedal pressure	197		By Ventilation
			198		By Equipment
			199		By Operation
170		By Swept area	200		By Telecommunication
171		By Lining			
172		By Cooling	201		By Audiovisual
173–188		By Safety	202		By Interior trimming
173–178		By Indicator/Measuring device	203		By Sanitation
			204		By House keeping
173		By Oil			

SN	Sector (S –)	Quasi Isolate	SN	Sector (S –)	Quasi Isolate
a	b	c	a	b	c
205		By Executive facility	213		By Change of filter element
206–218		By Maintenance factor	214		By Final drive oil
206		By Overall fuel consumption	215		By Slip differential change of oil
207		By Fuel consumption at constant speed	216		By Overdrive oil
208		By Fuel tank capacity	217		By Gearbox oil
209		By Distance per tank full	218		By Grease application
210–213		By Engine	219–221		By Tyre pressure
210		By Cooling system	219		By Normal driving
211		By Engine sump oil	220		By Fast driving
212		By Change of oil	221		By Full load driving

43 VERIFICATION

1 It was ensured that the division on the basis of a Train of Characteristics yielded only a sub-universe of whole entities in [1P1] and not of organs or constituents of a typical entity.

11 When a division on the basis of a characteristic yielded a non-whole of typical entity, the resulting isolates were placed in the later levels. In the subjects going with a (BS) in Commodity Production Engineering, such isolates usually represent Organs of the commodity concerned (*See* Sec 92).

2 Each of the Canons of Characteristics (19) was applied to each of the (QI). Each (QI) was found to satisfy the canons.

21 Wherever there existed a good schedule for the classification of a subject associated with the subject Motor Vehicle Production, then those (QI), their sequence, and the isolates based on those (QI), were used in the construction of the present schedule. An example of such adaptation is the set of (QI) and the isolates from the schedule for the classification of the subjects going with the (BS) 'Reciprocating Internal Combustion Engine' (27).

22 The Canon of Relevance, The Canon of Concomitance, and the Canon of Permanence gave some difficulty in their application to the (QI) chosen. The relevance of the characteristic

chosen depends on a careful selection of the documents for formulating the (QI). For example, it was, in certain cases, a little difficult to decide whether a subject goes with the (BS) Motor Vehicle Production or some other (BS) the subjects going with which contain information about Motor Vehicle — such as the use of motor vehicle in transportation, and traffic engineering. In some cases, a re-checking of the original documents on the basis of which the (QI) was formulated, clarified the situation. In a few cases, the help of a subject specialist was sought.

23 A checking of the isolates derived on the basis of the (QI) helps in conforming to the Canon of Concomitance. Where it is found that the use of isolates derived on the basis of different (QI) would lead to cross-classification, a note regarding the proper use of the schedule of isolates based on the different (QI) should be given.

24 In respect of the application of the Canon of Permanence, in some cases it was necessary to seek the help of the subject specialist — that is, Motor Vehicle Production Engineer.

5 STEP 5

50 OBJECTIVE

To derive a helpful sequence among the (QI) selected in Step 4. (This step belongs to the Idea Plane).

51 BACKGROUND KNOWLEDGE AND PREPARATION

1 The sequence derived among the (QI) should satisfy the approach of the majority of the specialists in the subject — that is, Motor Vehicle Production Engineers.

2 A careful study of the macro and micro documents in the subject was of help. Where the ideas were not clear, the help of a subject specialist was sought.

3 A knowledge of the Principles for Helpful Sequence (22) and experience in their application to facets and to (QI) are necessary. In the earlier work on the design of depth schedules, the Wall-Picture Principle has been found most helpful in the arrangement of the (QI). Experience has also shown that the Wall-Picture Principle generally gives a sequence among the (QI), that satisfies the approach of the majority of the specialists in the subject concerned (8, 17).

4 However, the application of the Wall-Picture Principle may be time-consuming if there are a large number of (QI). In order to increase the productivity in deriving a helpful sequence among the (QI), the technique of Group Strategy may be used with advantage (6).

5 In the case under consideration, there are 221 (QI) among which a helpful sequence was to be derived (*See* Table 1

in Sec 421). Therefore, following the Group Strategy, the (QI) were first sorted out into (QI) of Order 1, (QI) of Order 2 associated with each of the (QI) of Order 1, (QI) of Order 3 associated with each of the (QI) of Order 2, and so on. Specimen lists of the (QI) sorted out according to this procedure are given in Tables 2 to 4 below.

511 TABLE 2. QUASI ISOLATES OF ORDER 1

SN	Quasi Isolate	SN in Table 1
1	By Brand	1–3
2	By Make	4
3	By Purpose	5–21
4	By Design parameter	
4	of motor vehicle as a whole	22–31
42	of organs of motor vehicle	32–137
5	By Operation-associated characteristics	138–221

512 TABLE 3 QUASI ISOLATES OF ORDER 2 ASSOCIATED WITH THE (QI) OF ORDER 1 'BY PURPOSE'

SN	Quasi Isolate	SN in Table 1
1	By Service	5
2	By Portability	7
3	By Mass communication use	8
4	By Funeral use	9
5	By Medical/Hospital use	10
6	By Recreational use	11
7	By Cargo transport	12-13
8	By Animal transport	14
9	By Passenger transport	15-16
10	By Environment adapted to	17–21

513 TABLE 4. QUASI ISOLATES OF ORDER 3 ASSOCIATED WITH THE (QI) OF ORDER 2 'ENVIRONMENT ADAPTED TO'

SN	Quasi Isolate	SN in Table I
1	By Weather condition	17
2	By Physiography	18
3	By Altitude	19
4	By Latitude	20
5	By Gradient climb	21

6 *Grouping of* (QI).—The totality of the (QI) of Order 1 were grouped and the groups named as follows:

514 TABLE V. GROUPS OF QUASI ISOLATES

SN	Group of (QI)	SN in Table 1
1	Name-associated	1–4
2	Purpose-associated	5–21
3	Whole-machine-design-associated	22–31
4	Organ-design-associated	32–137
5	Operation-associated	138–221

61 *Arrangement of* (QI) *of Order* 1.—The Wall-Picture Principle was applied to the group of 5 (QI) of Order 1, taking a pair of them at a time, to derive a helpful sequence among them.

62 *Arrangement of* (QI) *of Order* 2.—The groups of (QI) of Order 2 associated with each of the (QI) of Order 1 were taken up successively for arrangement. For example, there are 3 (QI) of Order 2—"By Company", "By Model", and "By Year" — associated with the (QI) of Order 1 "By Brand". The Wall-Picture Principle was applied to these (QI) of Order 2, taking a pair of them at a time, to derive a helpful sequence among them.

63 Similarly, by applying the Wall-Picture Principle a helpful sequence was derived among each of the groups of (QI) of Order 2 associated with each of the (QI) of Order 1.

64 *Arrangement of* (Q1) *of Order* 3.—The groups of (Q1) of Order 3, associated with each of the (Q1) of Order 2, were taken up successively for arrangement. For example, there are 3 (Q1) of Order 3—"By Equipment", "By Voltage", "By Current" — associated with the (Q1) of Order 2 "By Power generation system", the latter being associated with the (Q1) of Order 1 "By Design parameter of organs of vehicle". The Wall-Picture Principle was applied to these (Q1) of Order 3, taking a pair of them at a time, to derive a helpful sequence.

65 Similarly, by applying the Wall-Picture Principle, a helpful sequence was derived among each of the groups of (Q1) of Order 3 associated with each of the (Q1) of Order 2.

66 This procedure was followed with each of the groups of (Q1) of Order 4, Order 5 etc.

67 In the case of a few groups of (Q1), the application of the Wall-Picture Principle was found a little difficult — that is, an unequivocal sequence of the (Q1) could not be determined easily. In such cases, some of the more general Principles for Helpful Sequence and the Principles for Sequence of Isolates in an Array were found helpful. They could be applied with comparatively greater facility. The Principle of Increasing Concreteness, the Principle of Later-in-Time, the Principle of Later-in-Evolution, and the Principle of Spatial Contiguity have been found particularly helpful in such cases. It will be remembered that all the Principles for Helpful Sequence are derivable from the Wall-Picture Principle.

52 RESULT

The Sequence of the (Q1) derived according to the procedure described in Sec 51 and its sub-sections is given in Table 1 column c. The second and later order (Q1) are indicated by appropriate indentions.

53 VERIFICATION

It has been shown that the sequence of (Q1) derived by the application of the Wall-Picture Principle conforms to the sequence of the (Q1) derived as follows: Correlate each of the (Q1) in each of the Groups of (Q1) of different orders with one or the other of the (FC) P, M, E, S, T and arrange them in that sequence in each of the groups of (Q1) (6). The P, M, E, S, T sequence of the (Q1) so derived may be used for verifying the sequence of the (Q1) derived by applying the Group Strategy and the Wall-Picture Principle. If among a group of (Q1) of one and the same order, two or more of the (Q1) get correlated with one and the same (FC), then the sequence among them may be determined by applynig the Wall-Picture Principle (6). Some examples are given in the following tables.

531 TABLE 6. SEQUENCE OF QUASI ISOLATES OF ORDER 1

SN	Quasi Isolate Group	Correlated with	SN in Table I
1	By Brand	Personality	1–3
2	By Make	Personality	4
3	By Purpose By Property of	Personality	5–21
4	Motor vehicle as a whole	Matter (Property)	22–31
5	Organs of vehicle	Matter (Property)	32–137
6	By Operation-associated characteristics	Energy	138–221

532 TABLE 7. SEQUENCE OF QUASI ISOLATES OF ORDER 2 ASSOCIATED WITH THE (QI) OF ORDER 1 "BY BRAND"

SN	Quasi Isolate	Correlated with	SN in Table 1
1	By Company	Personality	1
2	By Model (Design)	Matter (Property)	2
3	By Year	Time	3

533. TABLE 8. SEQUENCE OF QUASI ISOLATES OF ORDER 3 ASSOCIATED WITH THE (QI) OF ORDER 2 "BY CARGO BODY"

SN	Quasi Isolate	Correlated with	SN in Table 1
1	By Purpose	Personality	75–84
2	By Material	Matter (Material)	85
3	By Length	Matter (Property)	86
4	By Width	Matter (Property)	87
5	By Height	Matter (Property)	88
6	By Floor area	Matter (Property)	89
7	By Capacity	Matter (Property)	90

534 TABLE 9. SEQUENCE OF QUASI ISOLATES OF ORDER 4 ASSOCIATED WITH THE (Q1) OF ORDER 3 "BY TYRE"

SN	Quasi Isolate	Correlated with	SN in Table 1
1	By Brand	Personality	126
2	By Kind	Personality	127
3	By Material	Matter (Material)	128
4	By Fabrication (Structure)	Matter (Property)	129
5	By Maximum load	Matter (Property)	130
6	By Overall diameter	Matter (Property)	131
7	By Static load radius	Matter (Property)	132
8	By Size	Matter (Property)	133
9	By Weight of casing	Matter (Property)	134
10	By Inflation pressure	Matter (Property)	135
11	By Traction characteristics	Matter (Property)	136

6 STEP 6

60 OBJECTIVE

To allocate notation to the (Q1). (This step belongs to the Notational Plane.)

61 BACKGROUND KNOWLEDGE AND PREPARATION

1 A choice is to be made from the different notational systems used in the design of schemes for classification. The Mixed Notation of the Colon Classification together with its Sector Notation has been found convenient in the earlier work on the design of depth schedules.

2 The sequence of the (Q1) arrived at in the Idea Plane in Step 4 (Sec 42) should be retained in the Notational Plane.

3 In the Facet Structure, the greater the concreteness of the (Q1) the nearer is its position to the (BS). In the arrangement of the documents on the shelf and in the arrangement of the entries for them in a documentation list, the less specific treatment of a subject will be placed earlier to the more specific one. To secure this arrangement, the Principle of Inversion as applicable to the (Q1) (25) may be used. This means the allocation of the sectors in such a way that the ordinal value of the digits in the sector increases according as the (Q1) is nearer in position to the (BS) in the Facet Structure.

4 Provision has to be made for the interpolation and extrapolation of any new (Q1) that may arise in the future.

5 The majority of the isolates should each get (IN) of not more than 3 digits. This is a comfort to the eye and to the memory.

6 If each of the (QI) is to be allocated a separate sector, then a minimum of 221 sectors will be required for our purpose, as there are 221 (QI). Depending upon the boundary condition as to the number of (AIN) in (AI), we have the following data regarding the number of sectors and the number of (AIN) (24).

611 TABLE 10. CENSUS OF SECTORS AND (AIN)

Note.—The 'Starter' and 'Arrester' are each counted as a digit.

SN	N of digits in an (AIN) to be	N of	
		Sectors	(IN) available
1	1	3	31
2	2	12	212
3	3	51	923
		66	1,166

61 The data indicates that one and the same sector has to be allocated to two or more consecutive (QI) to extend the notation to all the 221 (QI), without raising the boundary condition of having not more than 3 digits in the majority of the (IN) and also to make full use of each of the sectors.

62 Care has also to be taken not to jeopardise the future interpolation or extrapolation, in the filiatory sequence, of any isolate(s) derived on the basis of any of the (QI) enumerated or any other (QI) that may have to be accommodated in future.

7 In the allocation of a specific sector to a (QI), the following factors should be kept in view:

71 The Law of Parsimony is to be conformed to so long as such conformity does not violate the more important principles applicable to the case.

72 Frequently occurring (QI) should, as far as possible, get a notation shorter than those occurring comparatively less frequently. An idea of the approximate frequency of occurrence of the (QI) may be obtained even while reading the documents, and picking up the Kernal Terms (*See* Sec 41).

73 If the number of isolates derived on the basis of a (QI) is comparatively large — say more than 16 — then a sector with a broader base should be allocated to that (QI). Alternatively, two or more sectors may be allocated to that (QI), if possible.

74 To facilitate the use of mnemonics, some of the (QI) should preferably be allocated sectors in which the first significant digit is an Hindu-Arabic numeral.

75 To facilitate the use of (AD) or the addition of figures in Hindu-Arabic numerals in deriving isolates or to take advantage of scheduled mnemonics, some of the (QI) should preferably be allocated sectors in which the first significant digit is a Roman capital or small letter. For using (AD), only Roman capital letter is possible.

8 In the earlier work on the design of depth schedules for subjects going with the (BS) Commodity Production Engineering the following pattern of allocation of sectors for the (QI) in [1P1], has been found convenient.

612 TABLE 11. ALLOCATION OF SECTORS

Note.—The 'Starter' and 'Arrester' in each of the digits in the sectors in Zones 4 to 6 are each counted as a digit.

SN	Sector	Schedule of	N of (IN) available
1	(S—a) to (S—za)	General-purpose Machine Element (=ME)	44
2	(S—zza)	Common Organ Isolates (Other than (ME)	22
3	(S—zz1) to (S—zzA)	Organ of remove 5	31
4	(S—z1) to (S—z9A)	Organ of remove 4	61
5	(S—zA) to (S—zZA)	Organ of remove 3	76
6	(S—1) to (S—9ZA)	Organ of remove 2	220
7	(S—A) to (S—ZZA)	Organ of remove 1	235
8	(S—a) to (S—ZZA), (S—(a), (S—(1)), (S—(A))	Isolates in [1P1]	1,166

62 RESULT

The sectors allocated to the (QI) are given in Table 1 column b in Sec 421.

63 VERIFICATION

1 The sequence of the (QI) arrived at in the Idea Plane has been retained in the Notational Plane.

2 The pattern of allocation of sectors to the (QI) in [IPI], suggested in Table 11 in Sec 612, has been conformed to (*See* Schedule in Sec 991).

3 Interpolation and extrapolation of new (QI) are provided for by leaving some sectors unassigned, as indicated in Tables 12 and 13.

631 TABLE 12. EFFICIENCY TABLE

Note.—(1) Boundary condition of not more than 3 digits in (IN) of Order 1.
(2) The 'starter' and 'arrester' are each counted as a digit.

SN	Zone and Sector	Number		
		Available	Used	Not used
a	b	c	d	e
1	(Z—0)			
	1-digited sector	..	..	..
	2 ,, ,,	3	..	3
	3 ,, ,,	12	..	12
2	(Z—a)			
	1-digited sector	1	1	..
	2 ,, ,,	3	3	..
	3 ,, ,,	12	6	6
3	(Z—1)			
	1-digited sector	1	1	..
	2 ,, ,,	3	3	..
	3 ,, ,,	12	4	8
4	(Z—A)			
	1-digited sector	1	1	..
	2 ,, ,,	3	3	..
	3 ,, ,,	12	1	11
5	(Z—(a))			
	1-digited sector	..	..	..
	2 ,, ,,	..	..	..
	3 ,, ,,	1	..	1
6	(Z—(1))			
	1-digited sector	..	..	..
	2 ,, ,,	..	..	..
	3 ,, ,,	1	1	..
7	(Z—(A))			
	1-digited sector	..	..	..
	2 ,, ,,	..	..	..
	3 ,, ,,	1	1	..
	Total	66	25	41

632 TABLE 13. SUMMARY OF THE DATA GIVEN IN TABLE 12

SN	Kind of Sector	Number			d×100 / c
		Available	Used	Not used	
a	b	c	d	e	f
1	1-digited	3	3	..	100
2	2 „	12	9	3	75
3	3 „	51	13	38	25
	Total ..	66	25	41	38

31 The tables indicate that out of the 66 sectors available only 25 have been allocated, leaving 41 sectors for interpolation purposes. It should, however, be noted that the 15 sectors of Zone 0 are not to be used. For, it may give rise to homonym with the (CN) derived according to the rule mentioned in Sec 941 category 2. Table 13 also indicates that the 1-digited sectors have been fully used, the 2-digited sectors to the extent of 75 per cent, and the 3-digited sectors only to the extent of 25 per cent. This is in conformity with the Law of Parsimony.

7 STEP 7

70 OBJECTIVE

To construct the schedule of isolates derived on the basis of each of the (QI) enumerated in Table 1 column c in Sec 421. (This step belongs to the Idea Plane and also to the Verbal Plane.)

71 BACKGROUND KNOWLEDGE AND PREPARATION

1 The isolates already picked up (*See* Sec 41, category 45), may now be grouped according to the (QI) noted on each of the slips.

2 A (QI) and the isolates derived on its basis are to be kept together in the sequence of increasing ordinal value of the sectors allocated to each of the (QI).

72 RESULT

The number of the array of a co-ordinate group of isolates. derived on the basis of a (QI), will correspond to the number of the order of that (QI).

The result obtained at this stage is to be worked upon further in the next step.

8 STEP 8

80 OBJECTIVE

To derive a helpful sequence among the isolates derived on the basis of each of the (Q1). (This step belongs to the Idea Plane).

81 BACKGROUND KNOWLEDGE AND PREPARATION

1 Each cultivated mind may think out a different sequence for the arrangement of the isolates. However, certain patterns in the sequence scan be recognised. One has to be aware of the sequence helpful to the majority of the specialists in the subject concerned. In the earlier work on the design of depth schedules, it has been found convenient to use the Principles for Isolate Sequence in an Array (21).

2 If a preferred sequence of the isolates is recognised in relation to the approach of the majority of the specialists in the subject, then that sequence may be derived on the basis of one of the above Principles for Isolate Sequence.

3 The arrangement of the isolates in a helpful sequence may be conveniently done in sub-steps as follows:

31 The isolates in (A1) derived on the basis of the first (Q1) are arranged using the appropriate Principle of Isolate Sequence.

32 The isolates in (A2), if any, associated with each of the isolates of (A1), mentioned in sub-step 1, are then arranged using the appropriate Principle of Isolate Sequence.

33 The isolates in (A3) associated with each of the isolates of (A2) mentioned in Sub-step 2 are then arranged using the appropriate Principle of Isolate Sequence.

34 Similarly, the isolates in (A4), (A5) etc, if any, are arranged, until all the isolates derived on the basis of the (Q1) get arranged in a helpful sequence.

35 Each of the four sub-steps mentioned above is to be carried out for the isolates of different orders, derived on the basis of each of the (Q1).

4 At this stage, it will be convenient to write out the schedule. For, it is then easier to show the coordinate and subordinate status of the isolates, and the number of isolates present in each array. This information is helpful in Step 9 for the allocation of notation to the isolates. A specimen of a part of the written schedule is given below:

Note.—(1) L = Letter-space. (2) The (QI) are underlined

10L	5L	5L	5L	

By Steering system
By Diameter of turning circles
Between Walls
In meters
In feet
Between curbs
In meters
In feet
By Number of turning circles lock-to-lock

82 RESULT

The sequence of the isolates derived according to the above procedure is given in the Schedule in Sec 991.

83 VERIFICATION

1 The sequence of each of the groups of coordinate isolates in most of the arrays has been found to conform to one or the other of the Principles for Isolate Sequence in an Array. Here are a few examples:

11 *Example* 1

The following isolates are arranged according to the Principle of Increasing Quantity, the entity concerned being the increase of the Lumens per watt (lwp) of the material of the filament of the lamp.

By Light
By Filament
Carbon
Tantalum
Osmium
Tungsten

12 *Example* 2

In all the cases where the isolates are formed by the addition of the figures given in the document to the (IN) allocated to the (QI), the Principle of Increasing Quantity is automatically conformed to.

13 *Example* 3

The following isolates are arranged according to the Principle of Decreasing Quantity, the entity concerned being the decrease in the tension (E) of the material of the spring.

By Material of Spring

Steel

Hard drawn	Silicon manganese
Oil-tempered	Flat CR strip
Annealed high carbon	Stainless 18-8
Chromium-vanadium	Chromium stainless

14 *Example* 4

The following isolates are arranged according to the Principle of Later-in-Time.

By Climatic control

Thermostatic control
Air-conditioning
Pressurisation

15 *Example* 5

By Curvature of window glass

Flat
Curved
Compound Curved
Wrap over

16 *Example* 6

The following (QI) are arranged in the sequence of Spatial Contiguity, left-to-right.

By Clutch
By Transmission
By Rear axle
By Final drive

17 *Example* 7

The Principle of Alphabetical Arrangement has been conformed to in the formation of isolates by the (AD).

2 In the schedule in Sec 991, the isolates derivable by the use of a device such as (AD), Geographical Device, Subject Device, etc, are not enumerated. But a note on how to derive the isolate is given in the appropriate places.

91 STEP 9

910 OBJECTIVE

To assign notation to each of the isolates. (This step belongs to the Notational Plane.)

911 BACKGROUND KNOWLEDGE AND PREPARATION

1 Suitable sectors have already been allocated to the (QI) (*See* Sec 61), keeping in view the approximate number and the kind of isolates derivable on the basis of each of the (QI).

2 The digits available in each sector are to be assigned to each of the isolates keeping in view the following factors:

21 The sequence of the isolates derived in the Idea Plane should be retained in the Notational Plane.

22 Provision should be made for the interpolation and the extrapolation of isolates in the filiatory sequence when they arise in future, without greatly changing the structure of the scheme.

23 The co-ordinate and subordinate status of the isolates among themselves should be indicated either by an expressive notation or by some other means.

24 The Canons for Mnemonics (23) should be conformed to, so long as such conformity does not violate other more important principle(s) applicable to the case.

25 The Law of Parsimony should be conformed to without violating any other more important principle(s) applicable to the case.

3 The (IN) is to be noted against each Isolate Term (on the right side) in the slip, and in the written out schedule (on the left side).

912 RESULT

The (IN) together with the isolate terms, arranged according to the increasing ordinal value of the digits in the (IN) are given in Sec 991.

913 VERIFICATION

1 The sequence of the isolates arrived at in the Idea Plane has been retained in the Notational Plane.

2 Provision for the interpolation and extrapolation of isolates has been made by leaving gaps among the (IN), at such positions where new developments are likely to take place. Interpolation can also be done by the use of the Interpolation Device (*See* Sec 9132, Note 2).

3 The co-ordinate and subordinate status among the isolates is indicated by expressive (IN). Where a subordinate isolate appears as if it is coordinate to the immediately preceding isolate, because of the use of the Telescoping Device, the beginning and the end of the telescoping points are indicated in the schedule in the appropriate places. Here is an example:

31 *Example* 1

f9a *By Shape of light*

Tel 1 (A4) *into* (A2) *begins*

f9b Rectangular

f9b1 Horizontal

f9b3 Vertical

f9d Circular
f9g Oval
Tel 1 (A4) *into* (A2) *ends*

4 The Canons of Mnemonics have been conformed to, as far as possible. Here are some examples.

41 *Example for Scheduled Mnemonics*

Z2	*By Environment*	Z5	*By Physiography* (Terrain)
Z2	*By Latitude*	Z51	Flat
Z21	Tropical	Z53	Undulating
Z25	Subtropical	Z54	Rough
Z28	Polar	Z56	Hilly
		Z57	Mountainous

Z3 *By Altitude*
Z31 Sea level
Z37 Mountain
Z38 Snow level

In the construction of the above schedule, the (IN) have been derived according to a schedule for "Environment" already available. To facilitate the use of Mnemonics the letters of the Roman alphabet (capitals) have been equated with the digits in the Hindu-Arabic numerals according to the following scheme:

B = 1	F = 5	K = 91	P = 95
C = 2	G = 6	L = 92	Q = 96
D = 3	H = 7	M = 93	R = 97
E = 4	J = 8	N = 94	S = 98

42 *Example for Systematic Mnemonics*

Isolate term	(IN) for the position of				
	Wheel	Window	Door	Seat	Engine
Front	zQ1	9j1	9n1	9w1	V1
Centre	zQ2	..	9n2	9w2	V2
Side	..	9j5	9n5	..	..
Rear	zQ7	9j7	9n7	9w7	V7

43 *Example for Seminal Mnemonics*

	Seminally equivalent ideas for the digit	Isolate		Isolate		Isolate		Isolate	
		N	Term	N	Term	N	Term	N	Term
4	Heat	c4	Heating facility	h4	Temperature gauge	9NE	Heated carrier		
	Damage	9F4	Wreck transporter	ZHJ4	Perishable food carrier				
	Interlink	v4	Linked steering						
5	Light/Colour	f5	Lighting facility	9c45	Tinted glass roof	9h5	Tinted glass window		
	Water	k15	Water-cooled brake	x5	Hydraulic steering	ze5	Wet disc clutch	9L15	Water carrier body
	Aesthetics	b5	Interior trimming						

44 *Example for Verbal Mnemonics*

The (AD) has been prescribed for the derivation of the Isolates on the basis of the (QI) "By Brand". The sector (S-(A)) has been allocated for this purpose. Thus,

(B) Buick (CH) Chevrolet (H) Hudson
(C) Cadillac (F) Ford (P) Pontiac

Other Examples of the mnemonic use of digits may be seen in the index in Sec 98. For example, under the terms "Fiberglass", "Front", "Manual", "Plastics", "Pvc", "Rear".

5 In Sec 61, category 74, it has been mentioned that the sectors for allocation to the (QI) should be so chosen as to facilitate the addition of Hindu-Arabic numerals with a view to conform to the Canons of Mnemonics without giving rise to a homonym, and to give autonomy to the classifier. Such provisions have been made in the schedule wherever the isolates are to be derived on the basis of (QI) such as "By Number" and "By Dimension".

6 The Law of Parsimony has been conformed to, as far as possible, by giving shorter notation to the (QI) which were approximately estimated to occur more frequently and by the use of Telescoping Device. The data given in Tables 14 and 15 illustrate the extent of conformity to the Law of Parsimony. A more detailed study of the conformity to parsimony is to be done after classifying an adequate sample of assorted documents with the schedule (*See also* Sec 96).

9131 TABLE 14. SAVING OF DIGITS THROUGH TELESCOPING

SN	Telescoping of	N of digits saved in an (AIN)	N of Isolates Telescoped	Approx N of digits saved	
				In each Telescoping	Progressive Total
1	(A2) into (A1)	1	60	60	60
	1	1	21	21	81
	3	1	50	50	131
	4	1	29	29	160
	5	1	60	60	220
	6	1	9	9	229
	7	1	5	5	234
	8	1	28	28	262
	9	1	14	14	276
	10	1	35	35	311
	11	1	75	75	386
	12	1	16	16	402
	13	1	110	110	512
	14	1	24	24	536
	15	1	60	60	596
	16	1	50	50	646
	17	1	32	32	678
	18	1	2	2	680

SN	Telescoping of	N of digits saved in an (AIN)	N of Isolates Telescoped	Approx N of digits saved	
				In each Telescoping	Progressive Total
2 (A3) into (A1)					
1		2	12	24	704
2		2	14	28	732
3		2	5	10	742
4		2	9	18	760
5		2	10	20	780
6		2	30	60	840
7		2	4	8	848
8		2	9	18	866
9		2	9	18	884
10		2	53	106	990
11		2	18	16	1006
12		2	17	34	1040
13		2	5	10	1050
14		2	30	60	1110
15		2	20	40	1150
16		2	270	540	1690
17		2	72	144	1834
18		2	33	66	1900
3 (A3) into (A2)					
1		1	80	80	1980
2		1	50	50	2030
3		1	10	10	2040
4		1	10	10	2050
5		1	10	10	2060
6		1	15	15	2075
7		1	25	25	2100
8		1	8	8	2108
9		1	10	10	2118
10		1	10	10	2128
11		1	3	3	2131
12		1	4	4	2135
13		1	15	15	2150
4 (A4) into (A1)					
1		3	15	45	2195
2		3	6	18	2213
3		3	40	120	2333
4		3	10	30	2363
5		3	2	6	2369
6		3	2	6	2375
7		3	10	30	2405
8		3	10	30	2435
9		3	10	30	2465
10		3	10	30	2495
11		3	7	21	2516
12		3	5	15	2531
13		3	7	21	2552
14		3	10	30	2582

SN	Telescoping of	N of digits saved in an (AIN)	N of Isolates Telescoped	Approx N of digits saved	
				In each Telescoping	Progressive Total
	15	3	3	9	2591
	16	3	20	60	2651
	17	3	27	81	2732
	18	3	2	6	2738
	19	3	25	75	2813
	20	3	50	150	2963
	21	3	18	54	3017
5 (A4) into (A2)					
	1	2	15	30	3047
	2	2	5	10	3057
	3	2	6	12	3067
	4	2	23	46	3113
	5	2	6	12	3125
6 (A4) into (A3)					
	1	1	8	8	3133
	2	1	5	5	3138
7 (A5) into (A1)					
	1	4	10	40	3148
	2	4	10	40	3188
	3	4	10	40	3228
	4	4	10	40	3268
	5	4	5	20	3288
	6	4	8	32	3320
	7	4	8	32	3352
	8	4	30	120	3472
8 (A5) into (A3)					
	1	2	2	4	3476
	2	2	3	6	3482
9 (A6) into (A2)					
	1	4	4	16	3498
	2	4	5	20	3518
	3	4	10	40	3558
10 Tel (A6) into (A3)					
	1	3	2	6	3564
	2	3	5	15	357

9132 TABLE 15. NUMBER OF DIGITS IN THE (IN) IN THE SCHEDULE

SN	(IN) with	N of (IN)	% of
1	1 digit	43	2·0
2	2 ,,	305	15·0
3	3 ,,	758	37·8
4	4 ,,	510	26·0
5	5 ,,	340	17·0
6	6 ,,	45	2·2
		2,001	100·0

Note.—(1) An average number of 10 (IN) is taken as the approximate number of (IN) that may be derived by the addition of the figures for the units of measure as indicated in different parts of the schedule, in counting the isolates in schedule.

(2) The digits T to Y are taken as significant digits and not as Emptying Digits. Interpolation of (IN) may be done by the use of the digit "i" as suggested in Paper B in this volume of this periodical.

7 Only about 1,000 isolates have been enumerated in the schedule. Of these 221 are (QI). About 1,000 (IN) are to be derived by Devices for the formation of array — for example (AD), and the addition of the given figure to a digit in the sector allocated to a (QI) to form an (IN). The schedule is thus slimmed by about 50 per cent.

8 The isolate terms used were checked for conformity to the Canon of Currency. Current glossaries, subject heading authority lists, thesaurii, and handbooks on the subject were helpful for the purpose. For example, the term 'Camel back' is preferred to "Dray body" and "Diesel engine" for "Compression ignition engine".

92 STEP 10

920 OBJECTIVE

To construct the schedule of Organs of motor vehicle.

921 BACKGROUND KNOWLEDGE AND PREPARATION

1 In Sec 43 it has been mentioned that the division on the basis of a Train of Characteristics should yield only a sub-universe of whole-entities of typical entity. If a sub-universe of non-whole entity results, it is placed in a schedule of later levels. In the subjects going with the (BS) Commodity Production Engineering, such non-whole entities are usually organs of different removes.

2 The isolates deemed to represent Organs of remove 1 in the context of the commodity concerned may conveniently be arranged in a sequence conforming to one of the Principles of Spatial Contiguity (20).

3 In the earlier work on the design of depth schedules for subjects going with (BS) in Commodity Production Engineering, it has been found convenient to group the Organs of remove 2 according to the general function of each of them (28).

4 Organs of remove 3, if any, may also be similarly grouped by the general function of each of them.

5 The sectors that may be allocated to the schedule of Organs of remove 1, Organs of remove 2, etc, are given in Table 11 in Sec 612.

6 It has also been found convenient to telescope the levels later than [1P2] into [1P2]. But [1P2] is not telescoped into [1P1] [10].

7 In most of the schedules for the depth classification of subjects going with a (BS) in Commodity Production Engineering, the procedure mentioned in catagories 3 to 6 above has been followed for the construction of the schedule of Organ Isolates. In the present schedule, however, another method has been tried.

71 It has been found that almost all the Organ Isolates that may occur in [1P2] occur also as qualifiers in [1P1]. Examination of a large number of micro documents on Motor Vehicle Production and also on other subjects in Commodity Production Engineering, it has been noted that the General Purpose Machine Elements, such as screws, nuts, and bolts very rarely occur as Organ Isolates in such subjects. In fact, in none of the documents examined so far we have come across such an isolate in these subjects.

72 It may also be noted that the Organ Isolates occurring as qualifiers in [1P1] have been arranged according to the Principles for Helpful Sequence, particularly the Principle of Bottom-upwards and the Principle of Clock-wise Direction.

8 It has therefore been found convenient to use in the schedule of Organ Isolates the same (IN) for each of the Organs occurring as a qualifier in [1P1].

922 RESULT

A note on the method of deriving the Organ Isolates is given in Sec 991.

923 VERIFICATION

1 The sequence of the isolates in the schedule of organs conforms to the Principle of Bottom-upwards and the Principle of Clock-wise Direction.

2 The Canon of Scheduled Mnemonics and the Canon of Systematic Mnemonics have been conformed to.

3 In a (CN) the Organ Isolate will immediately be preceded by a "Comma". Therefore, there will be no homonym between an (IN) for an organ and the same (IN) occurring in [1P1] as qualifier (*See also* Sec 941, category 2).

4 The schedule has been slimmed to the extent that the Organ Isolates are not enumerated in the schedule of Organs.

5 The advantages and disadvantages of the preparation of the schedule of Organ Isolates according to the two methods mentioned above in subjects going with the (BS) in Commodity Production Engineering should be examined in detail.

93 STEP 11

930 OBJECTIVE

To prepare an index to the schedule.

931 BACKGROUND KNOWLEDGE AND PREPARATION

1 It has been found convenient to prepare the index according to the model of the "Index to the schedules" given in Part 2 of *Colon classification*, Ed 6, 1960.

2 The slips containing the (IN) with the corresponding Isolate Terms (*See* Sec 911, category 3) may be arranged in the alphabetical sequence of the terms.

21 Alternative terms and the cross-reference entries, if any, are to be interpolated in the appropriate sequence.

22 The ISI Standard, IS: 1275-1958 *Rules for making alphabetical index* is of help.

23 A standard procedure was worked out for the manipulation of the slips, the consolidation of the entries, writing out the index indicating the coordinate and subordinate terms with appropriate indentions etc (2).

24 Indexes to schedules previously published were examined and the pattern conformed to.

932 RESULT

An index to the schedule is given in Sec 98.

933 VERIFICATION

1 Homonymous terms were avoided by supplying appropriate individualising elements.

2 Consecutive entries paralleling the arrangement of the isolates in the schedule were deleted.

3 (IN) not conforming to the Canons of Mnemonics were corrected wherever possible.

94 STEP 12

940 OBJECTIVE

To classify the assorted documents already selected (*See* Sec 41, category 41).

941 BACKGROUND KNOWLEDGE AND PREPARATION

1 Wherever warranted by a document two or more isolates derived on the basis of different (Q1) may be combined. The resulting isolate will be a Superimposed Isolate (12).

2 If in classifying a subject, an isolate from the schedule of Organs is to be directly attached to the (BC) without the occurrence of an isolate from the schedule of [1P1], then a "0" (zero) should be added immediately before the (IN) taken from the schedule of Organs (9).

3 The symbol "=" may be used to connect

31 The digits derived by the application of the (AD) to each of the members of a multinominal such as that may occur in the name of a brand;

32 The parts of an (IN) representing the members of a unit of measure such as foot and inch; and

33 The integral and the decimal part in a number (4).

4 Array Division by Packet Notation may be used wherever convenient (11). In the Idea Plane, it consists of a recurring use of a sequence of characteristics for the subdivision of two or more isolates going with the same (BS) which are capable of such subdivision. In the Notational Plane, it consists in the use of the appropriate (IN), including Superimposed (IN), enclosed in circular brackets, with a "0" (zero) preceding it, for the purpose of such subdivision of an (IN). For example,

kR0(kP2)-kQ0(kNJ-kG20=9) represents Rear brake of double caliper disc type, Front brake of multiple disc type with 20·9 cm wide shoe.

41 In most cases it is found convenient to omit the common first digit occurring in the (IN) enclosed within the circular brackets. If the notation has been carefully assigned to the (IN) the omission of such a first digit will not create any homonym in the (CN). Thus, the number given in category 4 above will become

kR0(P2)–kQ0(NJ-G20=9)

5 In the schedule, the formation of the (IN) according to the two systems of units of measure — cgs and fps — is provided for. However, a library may use one system as the favoured system. For instance, in the examples given in Sec 992 the fps system is taken as the favoured system. For the favoured system, the last digit — usually 'A' or 'B' — of the (IN) given in the schedule may be omitted and the figure for the measure given

in the document directly added. Thus, a saving of digits is effected without creating any homonym in the (CN).

6 A co-extensive (IN) is to be assigned to each of the documents and the (CN) written on top of each Main Entry (*See* Sec 41, category 41).

7 The entries should be arranged in the classified sequence.

942 RESULT

A sample list of 9 examples classified according to the present schedule, arranged, and featured as described in Sec 95, is given in Sec 992.

943 VERIFICATION

The (CN) for each of the documents was found to be generally co-extensive with the specific subject of the document concerned.

95 STEP 13

950 OBJECTIVE

To prepare Feature Headings on the basis of the (CN) assigned to each of the documents.

951 BACKGROUND KNOWLEDGE AND PREPARATION

1 A knowledge of the use of the Chain Procedure as applicable to the preparation of Feature Headings is helpful.

2 A Fea.ure Heading may be rendered according to the pattern used in the list of examples given in the article on the construction of a depth schedule for Locomotive Production (5).

3 Such a pattern of rendering of Feature Headings may not be helpful in a documentation list when the number of Feature Headings derived is large.

4 Therefore, a different method of rendering the Feature Headings has been tried in the examples given in Sec 992.

5 Homonyms in Feature Headings, if any, may be resolved by the use of auxiliary word or individualising term.

952 RESULT

In the sample list of 9 examples given in Sec 992, the Feature Headings have been prepared according to the new method.

953 VERIFICATION

1 It was ensured that there were no homonyms in the Feature Headings.

2 The helpfulness of the new method of rendering the Feature Headings has to be evaluated by the actual use of the

method in documentation lists (*See also* the Note in Sec 992).

96 STEP 14

960 OBJECTIVE

To examine the possibility of effecting economy in notation on the basis of a study of the (CN) assigned to an assorted set of documents.

961 BACKGROUND KNOWLEDGE AND PREPARATION

1 In the earlier studies on the design of schemes for classification, a study of the frequency of the occurrence of each (QI) and their combination in the (CN) for each of the assorted documents has been found helpful (7).

11 Each (IN) occurring in a (CN) (in the Main Entry) is marked off as derived on the basis of the appropriate (QI).

12 A table indicating the frequency of occurrence of each of the (QI) and the sector allocated to each of them may be prepared.

13 A table indicating the frequency of combination of (QI) in the (CN) may be prepared.

14 A frequency curve visualising the data may also be drawn.

2 The frequency of occurrence of the different (IN) themselves in the (CN) for the assorted documents may be studied and a frequency table prepared.

962 RESULT

1 Nearly 500 micro documents on Motor Vehicle Production have been scanned. About 150 have been selected for detailed study. Seventy of these micro documents have each been assigned a (CN) according to the schedule.

2 In 56 of the (CN) the number of the (QI) combined ranged from 98 to 105. In 14 of the (CN) it ranged from 10 to 35.

3 There was no document the (CN) for which required the combination of more than 105 (QI). However, each of the 221 (QI) occurs in some document or the other dealing with the subjects going with the (BS) Motor Vehicle Production. Therefore, schedules have been provided for all the 221 (QI).

4 The number of digits in each of the component isolates in each of the (CN) for the seventy micro documents was counted. The resulting data is presented in Table 16.

5 The average number of digits in a (CN), excluding the connecting digits, is 61.

9621 TABLE 16. NUMBER OF DIGITS IN (CN)

S N	N of digits in a component (IN)	N of (IN)	% of 6,139
1	1–digit	55	0·9
2	2–digits	639	10·6
3	3– ,,	2520	41·0
4	4– ,,	1228	20·0
5	5– ,,	1055	17·2
6	6– ,,	294	4·8
7	7– ,,	344	5·6
8	8– ,,	4	0·1
9	9– ,,	1	..
		6,139	100·0

963 VERIFICATION

1 The data in Table 15 (Sec 9132) shows that about 55% of the isolates in the schedule have been assigned an (IN) having three or less than three digits.

2 The data in Table 16 (Sec 9621) shows that 52% of the component isolates in a (CN) get an (IN) having three or less than three digits. Only 48% of the component isolates in a (CN) get an (IN) having four or more than four digits. This is in fair conformity with the Law of Parsimony.

3 There was no need for the change of any of the sectors allocated to the (QI).

4 It may be remembered that the studies made here are mainly for the purpose of demonstration of the different studies that may have to be done for the purpose of effecting economy in the notational plane as a step before the finalisation of the schedule.

5 It is necessary that at least 500 assorted nascent micro documents in the subject field Motor Vehicle Production be each co-extensively classified according to the provisional schedule now constructed and the kind of studies described above be carried out with a view to finalising the sector allocation.

97 HOLISTIC APPROACH

The steps in the design have been described as if they were independent, well defined pieces of work. However, in the actual

practice of the design and development of a depth schedule, it may be necessary to work simultaneously on two or more steps. For instance, it was pointed in Sec 41 that concurrently with the work in Step 4, a record of the isolate term was prepared in order to increase the productivity of the design work at the later stages. Again, it may be necessary to simultaneously work in the Idea and Verbal Planes, and sometimes even in the Notational Plane.

98 INDEX TO SCHEDULE

Note.—1 The (1N) given against an entry is the (1N) assigned to that isolate in the schedule given in Sec 991.

2 Abbreviations used: *irt* = in relation to

991 SCHEDULE
Basic Classes

D93B Motor Vehicle Production Engineering

T (A5) *into* (A3) *begins*

D93C Passenger-carrier-motor vehicle production
D93C1 Motor car (Automobile) production
D93C2 Motor bus production
D93C5 Motor cycle production

D93C6 Motor-scooter production
D93C8 Moped production
D93D Freight-carrier-motor vehicle production
D93D1 Motor truck production
D93D3 Truck trailer production
T (A5) *into* (A3) *ends*

Foci in [1P]

Organ of Motor Vehicle
Note.—The (1N) *for the organ isolates occurring as qualifiers in* [1P1] *is to be used.*
(*Illustrative*)
fH1 Head light
zza Wheel
A Engine
(*Example*)
D93C1, (F)-X1-L6, fH1 Headlight of the six cylindered petrol engine Ford motor car
D93D1,(D),zza:7 Mounting the wheels of the Dodge motor truck.

Earlier level
Isolates in [1P1]

a *By Maintenance factor*
By Tyre pressure
a1 *By Normal driving*
a1B Front tyre
a1BA In Kg/sq cm
a1BB In psi
a1H Rear tyre
a1HA In Kg/sq cm
a1HB In psi

a3 *By Fast driving*
a3B Front tyre
a3BA In Kg/sq cm
a3BB In psi
a3H Rear tyre
a3HA In Kg/sq cm
a3HB In psi

a7 *By Full load driving*
a7B Front tyre
a7BA In Kg/sq cm
a7BB In psi
a7H Rear tyre
a7HA In Kg/sq cm
a7HB In psi
Note.—Add the given figure to the appropriate (*1N*) *and read it as an integer.*
(*Illustrative*)
a1BB20 20 psi front tyre pressure, normal driving
a3HB26 26 psi rear tyre pressure, fast driving
a7BB24 24 psi front tyre pressure, full load driving

aB *By Grease application*
Note.—(1) *Add the given figure for the number of points to aB and read it as an integer.*
(2) *Divide the given figure for the distance by* 1,000, *prefix A to it if Km and B if miles and add the result to the* (*1N*) *derived according to Note* 1.
(*Illustrative*)
aB4A2 4 points every 2,000 km
aB4B4 4 points every 4,000 miles

aC *By Gear box oil*
aCA In litre
aCB In pint
Note.—Add the given figure to the appropriate (*1N*) *and read it as an integer.*
(*Illustrative*)
aCA8≠5 8·5 litres
aCB17 17 pints

aE *By Overdrive oil*
aEA in litre
aEB In pint

Note.—Add the given figure to the appropriate (IN) and read it as an integer.
(Illustrative)
aEA6=5 6·5 litres
aEB14=5 14·5 litres

aF *By Slip differential change of oil* (Distance run)
aFA In Km
aFB In miles
Note.–Divide the given figure for distance by 1000, add it to the appropriate (IN) *and read it as an integer.*
(Illustrative)
aFA7 7,000 Km
aFB12 12,000 miles

aG *By Final drive oil*
aGA In litres
aGB In pints
Note.—Add the given figure to the appropriate (IN) *and read it as an Integer.*
(Illustrative)
aGA2 2 litres
aGB5 5 pints

aH *By Engine maintenance*
T1 (A3) *into* (A2) *begins*
aJ *By Change of filter element*
aJA In km
aJB In miles
Note.–Divide the given figure by 100, add the result to the appropriate (IN) *and read it as an integer.*
(Illustrative)
aJA40 4,000 km
aJB85 8,500 miles

aK *By Change of oil* (Distance)
aKA In km
aKB In miles
Note.–Divide the given figure by 100, add it to the appropriate (IN) *and read it as an integer.*
(Illustrative)
aKA25 2,500 km
aKB40 4,000 miles

aM
aMA
aMB
aMA4=7 4·7 litres
aMB8=5 8·5 pints

aN
aNA
aNB
aNA18=2 18·2 litres
aNB32 32 pints

aP
aPA
aPB
aPA140 140 km
aPB225 225 miles

aR
aRA
aRB
aRA75 75 litres
aRB16 16 Imperial gallons

aT
aTA
aTB

By Engine sump oil
In litres
In pints
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
4·7 litres
8·5 pints

By Cooling system
In litres
In pints
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
18·2 litres
32 pints

By Distance per tank full
In km
In miles
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
140 km
225 miles

By Fuel tank capacity
In litres
In Imperial gallons
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
75 litres
16 Imperial gallons

By Fuel consumption at constant speed
In km/litre at km/hr
In mpg at mph
Note 1.—*Add the given figure for speed to* aTA *or* aTB *as the case may be and read it as an integer.*
2.—*Add the given figure for* km/litre *or* mpg *as the case may be to "A", add the resulting* (IN) *to the appropri-*

	ate (IN) *derived according to Note* 1, *and read it as an integer.* (*Illustrative*)	b81 b82 b88
aTA25A5	5 Km/litre at 25 km per hour	c
aTB30A25	25 mpg at 30 mph	c1 c12
aV	*By Overall fuel consumption*	c16 c2
aVA	In Km/litre	c23
aVB	In mpg *Note.—Add the given figure to the appropriate* (IN) *and read it as an integer.* (*Illustrative*)	c25 c253 c27 c27F
aVA6	6 Km/litre	
aVB25	25 mpg	
	T 1 (A3) *into* (A2) *ends*	c3 c31
b	*By Facility and comfort accessory*	c34 c38
b1	*By Executive facility*	c381
b12	Writing table	c382
b16	Typewriter	
b18	Dictaphone	c4 c41
b2	*By Housekeeping facility*	c44
b21	Relaxation	
b22	Sleeping	
b23	Cooking	c45 c48
b3	*By Sanitary facility*	
b31	Washing	
b33	Toilet	c8
b35	Bath	c82 c83
b5	*By Interior trimming*	c87
b52	Sound deadening sheet	c871
b53	Felt underlay	c872
b54	Carpet	
b541	Cut pile	
b543	Looped pile	d
b55	Rubber mat	dC
b5F	Knit-weave vinyl	dCA
b5H	Leather cover	dCB
b5M	Walnut panel	
b6	*By Audio-visual accessory*	
b63	Radio	
b632	Pushbutton	
b64	Stereosonic tape system	dCA262
b65	Television	dCB16
b8	*By Telecommunication accessory*	dE dEA

	Telephone
	Two-way radio
	Radar
	T 1 (A2) *into* (A1) *begins*
	By Ventilation and heating
	By Mechanism of operation
	Manual
	Automatic
	By Equipment
	Fan
	Blower
	Motor driven
	Compressor
	Freon
	By Purpose
	T 1 (A4) *into* (A2) *begins*
	By Ventilation
	Fresh air admittance
	Smog control
	Air ducting
	Hood
	Door
	By Heating
	Defrosting
	Heating
	T 1 (A5) *into* (A3) *begins*
	Hot water
	Hot air
	Tel 1 (A5) *into* (A3) *ends*
	By Climatic control
	Thermostatic control
	Air-conditioning
	Pressurisation
	Slight
	Full
	Tel 1 (A4) *into* (A2) *ends*
	By Baggage accommodation
	By Capacity
	In cc
	In cu inch *Note.—Add the given figure to the appropriate* (IN) *and read it as an integer.* (*Illustrative*)
	262 cc
	16 cu in
	By Height
	In cm

dEB	In inch	f1H	Shock absorber
	Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*	f1K	Bumper
		f1K1	Projecting
		f1K5	Built in
		f1KB	Front bumper
	(*Illustrative*)	f1KH	Rear bumper
dEA50	50 cm	f1L	Shock absorption front
dEB21	21″	f1M	Better vision facility
dG	*By Width*		*T* 1 (A4) *into* (A3) *begins*
dGA	In cm	f1N	Wide front vision
dGB	In inches	f1P	Sun visor
	Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*	f1R	Rear view mirror
		f1S	Windshield wiper
			T 2 (A5) *into* (A3) *begins*
	(*Illustrative*)	f1T	Self parking
dGA75	75 cm	f1U	Single speed
dGB30	30″	f1V	Twin speed
			Tel 2 (A5) *into* (A3) *ends*
dJ	*By length*		
dJA	In cm	f1X	Windshield washer
dJB	In inch	f1X2	Manual plunger
	Note.—Add the given figure to the appropriate (N) *and read it as an integer.*	f1X6	Mechanical
		f1XG	Electrical
			Tel 1 (A4) *into* (A3) *end*
	(*Illustrative*)	f5	*By Light*
dJA135	135 cm		
dJB54	54″		*T* 2 (A3) *into* (A2) *begins*
		f6	*By Mechanism of operation*
dM	*By Fixity*	f61	Fixed
dM1	Fixed	f63	Retractable
dM6	Detachable	f7	*By Filament*
		f71	Carbon
dR	*By Position*	f72	Tantalum
dR1	Front	f73	Osmium
dR2	Top	f75	Tungsten
dR5	Side		
dR6	Underneath	f8	*By Contour of reflector*
dR7	Rear	f83	Circular
	Tel 1 (A2) *into* (A1) *ends*	f831	Source at focus
		f836	Source out of focus
f	*By Safety provision*	f85	Parabolic
f1	*By Safety device*	f86	Elliptical
f11	Safety console	f88	Paracyl
f12	Safety belt		
f121	Front	f9a	*By Shape*
f127	Rear		
f12C	Safety belt with floor anchorage		*T* 2 (A4) *into* (A2) *begins*
		f9b	Rectangular
f15	Anti-burst door lock	f9b1	Horizontal
f17	Padded instrument panel	f9b3	Vertical
		f9d	Circular
f1B	Padded steering wheel	f9g	Oval
f1D	Zone toughened windscreen		*Tel* 2 (A4) *into* (A2) *ends*
f1F	Shatter proof glass	fB	*By Power* (watts)

Note.—Add the given figure and read it as an integer.
(Illustrative)
fB275 275 watts
fB350 350 watts

fD *By Position*
fD1 Front
fD3 Side
fD7 Rear

fH *By Purpose*
fH1 Headlight
fH12 Main beam
fH13 Sealed beam
fH2 Reversing
fH6 Stop
fHB Cornering
fHE Fog
fHJ Spot
fHM Internal

fK *By Brand*
Note.—To be derived by (AD)
(Illustrative)
fKL Lucas

fM *By Number*
Note.—Add the given figure and read it as an integer.
(Illustrative)
fM2 2 lights
fM8 8 lights
fM12 12 lights
T 2 (A3) *into* (A2) *ends*

T 2 (A2) *into* (A1) *begins*
h *By Indicator/Measuring device*
h1 *By Time Measure*
h11 Clock

h3 *By Speed measure*
h31 Speedometer
h34 Low speed indicator
h36 Revolution operator
h37 Tachometer

h4 *By Temperature measure*
h41 Thermometer
h45 Radiator temperature gauge

h5 *By Fuel measure*
h51 Fuel gauge

h6 *By Electrical power measure*
h61 Ampere gauge
h64 Voltameter
h65 Wattmeter
h66 Watt-hour meter

h7 *By Oil measure*
h71 Oil presence gauge
h76 Oil quantity gauge
Tel 2 (A2) *into* (A1) *ends*

k *By Brake system*
k1 *By Cooling*
k15 Water
k16 Oil
k18 Air

k9Y *By Lining area*

T 3 (A3) *into* (A2) *begins*
kA In sq cm
kB In sq inch
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
kA162 162 sq cm
kB25=5 25·5 sq inch
T 3 (A3) *into* (A2) *ends*

kBZ *By Swept area*

T 4 (A3) *into* (A2) *begins*
kC In sq cm
kD In sq inch
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
kC548 548 sq inch
kD85 85 sq cm
T 4 (A3) *into* (A2) *ends*

kDZ *By Brake-pedal pressure*

T 5 (A3) *into* (A2) *begins*
kE In Kg
kF In lb
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
kE45 45 Kg
kF95 95 lb
T 5 (A3) *into* (A2) *ends*

kFZ *By Shoe*

T 6 (A3) *into* (A2) *begins*

kG *By Width*
kGA In cm
kGB In inch
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
kGA20=9 20·9 cm
kGB7=25 7·25 inch

kK *By Kind*
kK1 Leading shoe
kK7 Trailing shoe

kL *By Number*
kL1 One
kL2 Two
kL3 Three

T 6 (A3) *into* (A2) *ends*

kLZ *By Construction of brake*

T 7 (A3) *into* (A2) *begins*

kM Drum
kMA Diameter in cm
kMB Diameter in inch
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
kMA39=4 39·4 cm
kMB15=5 15·5 inch
kN Disc
kNA Diameter in cm
kNB Diameter in inch
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
kNA24=9 24·9 cm
kNB9=8 9·8 inch
kNJ Multiple disc
kP Caliper
kP1 One (single)
kP2 Double
kPB Floating

T 7 (A3) *into* (A2) *ends*

kPZ *By Brake in relation to wheel*

T 8 (A3) *into* (A2) *begins*

kQ Front
kQ1 One
kQ2 Two
kR Rear
kR1 One
kR2 Two
kT On all wheels

T 8 (A3) *into* (A2) *ends*

kV *By Assistance*
kV5 Hydraulic
kV6 Mechanical linkage
kV8 Air
kV81 Air suspended (Booster)
kVB Compressed air
kVG Vacuum (Power)
kBG1 Vacuum suspended
kVJ Servo
kVP Foot
kVP5 Fluid fly wheel
kVR Hand

kW *By Purpose*
kW1 Parking
kW3 Service

kZA *By Brand* (Name)
Note.—To be derived by (AD).
(*Illustrative*)
kZG Girling

n *By Steering system*

T 3 (A2) *into* (A1) *begins*

p *By Diameter of turning circles*

pA Between walls

T 9 (A3) *into* (A2) *begins*

pB In metres
pC In ft

T 9 (A3) *into* (A2) *ends*

pG Between curbs

T 10 (A3) *into* (A2) *begins*

pH In metres
pJ In ft

T 10 (A3) *into* (A2) *ends*
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
pB12 12 meters between walls
pC36=5 36′ 5″ between walls

pH10—5 10·5 meters between curbs
pJ24 24′ between curbs

r *By Number of turning circles, lock-to-lock*
Note.—Add the given figure and read it as an integer.
(*Illustrative*)
r2=4 2·4 turning circles
r3 3 turning circles

s *By Rotation of the steering wheel* (in deg)
Note.—Add the given figure and read it as an integer.
(*Illustrative*)
s15 15°
s30 30°

t *By Gear ratio*
Note.—Add the given figure and read it as an integer.
(*Illustrative*)
t18=1 18·1 : 1
t24 24 : 1

u *By Steering wheel diameter*
uA In cm
uB In inch
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
uA38 38 cm
uB15 15″

v *By Linkage*
v1 Integral
v5 Linkage

w *By Steering gear mechanism*
w1 Worm and roller (Ross-Gemner)
w2 Worm and sector
w3 Screw and ballnut (Saginau)
w5 Recirculating ball and nut (Burman)
w6 Cam and lever (Ross)
w8 Rack and pinion

x *By System*
x2 Manual

x3 Power-assisted
x5 Hydraulic
x8 Pneumatic

y *By Brand*
Note.—To be derived by (AD).
(*Illustrative*)
yT Toyota
Tel 3 (A2) *into* (A1) *ends*

z0X *By Transmission*

T 4 (A2) *into* (A1) *begins*
z0Y *By Clutch*

T 1 (A3) *into* (A1) *begins*
za *By Engagement*
zaB Diaphragm
zaBA Diameter in cm
zaBB Diameter in inch
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
zaBA23 23 cm
zaBB9 9″
zaD Coiled spring

zb *By Disc*

T 1 (A4) *into* (A1) *begins*
zc *By Diameter*
zcA In cm
zcB In inch
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
zcA14=5 14·5 cm
zcB6=25 6·25 inches

ze *By State of disc*
ze4 Dry
ze5 Wet

zf *By Number of discs*
zf1 Single
zf2 Double
zf8 Multiple
T 1 (A4) *into* (A1) *ends*

zh *By Brand of clutch*
Note.—To be derived by (AD).
(*Illustrative*)

zhJ Jaeger
T 1 (A3) *into* (A1) *ends*

zj *By Method of transmission*
zj1 Lay shaft
zj3 Tubular shaft with ball and trunnion
zj5 Pinion and ring gear on axle
zj8 Counter shaft

T 11 (A3) *into* (A2) *begins*
zjB Selective sliding gear
zjD Constant mesh
zjG Synchronised
T 11 (A3) *into* (A2) *ends*

zjJ Fluid coupling
zjM Torque-converter
zjP Torque-converter coupling
zjR Planetary

zk *By Kind of shift*
zk1 Hydrostatic
zk3 Hydrodynamic
zk6 Automatic
zk62 Semi-automatic
zk8 Power-assisted shift
zkD Power shift
zkL Manual shift
zkP Non-shifting

zm *By Rear axle*
zm1 Differential case mounted
zm2 Semi-floating
zm3 Three quarters floating
zm7 Full floating
zmB Sprung
zmG Unsprung

zmZ *By Final drive*

T 2 (A3) *into* (A1) *begins*
zn *By Gear ratio*
Note.—Add the given figure and read it as an integer.
(Illustrative)
zn4 = 11 4·11
zn6 = 2 6·2

znZ *By Arm*

T 2 (A4) *into* (A1) *begins*
zp Leading
zp1 Single
zp2 Double
zq Trailing
zq1 Single
zq2 Double
T 2 (A4) *into* (A1) *ends*

zr
zr1
zr15
zr3
zrZ
zs
zsB
zsC
zsD
zt
zsB1 = 6
zsD3 = 2
ztZ
ztZ1
ztZ2
zu
zv
zw
zu6
zv2
zx
zx5
zx6

By Kind of gearing
Hypoid bevel
Power lock
Spiral bevel
T 2 (A3) *into* (A1) *ends*

By Gear box
By Gear ratio

T 3 (A4) *into* (A1) *begins*
Forward
First gear
Second gear
Third gear
Reverse
Note.—Add the given figure for the ratio to the appropriate (IN) *and read it as an integer.*
(Illustrative)
Forward first gear ratio 1·6:1
Foward third gear ratio 3·2:1
T 3 (A4) *into* (A1) *ends*

T 3 (A3) *into* (A1) *begins*
By Number of auxiliary transmission speeds
(Transfer case)
Note.—Add the given figure and read it as an integer.
(Illustrative)
One auxiliary speed
Two auxiliary speeds
T 3 (A3) *into* (A1) *ends*

By Number of transmission speed

T 4 (A4) *into* (A1) *begins*
Forward
Reverse
Infinitely variable
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
Six forward speeds
Two reverse speeds
T 4 (A4) *into* (A1) *ends*

T 4 (A3) *into* (A1) *begins*
By Type of gearbox
Control lever on steering column
Electrical selection

zxC Epicyclic
zxE Synchromesh

zy *By Drive*
zy1 Front wheel
zy4 Four wheel
zy7 Rear wheel
zyE Interrupted
zyJ Continuous
T 4 (A3) *into* (A1) *ends*
T 4 (A2) *into* (A1) *ends*

zza *By Wheel*

T 5 (A2) *into* (A1) *begins*
zzaZ *By Tyre*
By Traction characteristics

T 5 (A4) *into* (A1) *begins*
zzb *By Total air-and-rolling resistance*

T 1 (A5) *into* (A1) *begins*
zzc In Kg after ... Km
zzd In lb after ... miles
Note.—Add the given figure for the resistance to the appropriate (IN) *and read it as an integer. Add to the resulting* (IN) *the figure for km or miles as the case may be, with "A" interpolated between the two sets of numbers. Read the added digits as integers.*
(Illustrative)
zzc43A15 43 Kg after 15 km
zzd92A18 92 lb after 18 miles
T 1 (A5) *into* (A1) *ends*

zzf *By Air resistance*

T 2 (A5) *into* (A1) *begins*
zzg In % at Km/hr
zzh In % at mph
Note.—Add the given figure for the percentage to the appropriate (IN) *and read it as an integer. Add to the resulting* (IN) *the figure for km/hr or mph as the case may be, with "A" interpolated between the two sets of numbers. Read the added digits as an integer*
(Illustrative)
zzg1=5A40 1·5% at 40 km/hr

zzh1A60 1% at 60 mph
T 2 (A5) *into* (A1) *ends*
T 5 (A4) *into* (A1) *ends*

T 5 (A3) *into* (A1) *begins*
Note.—For Inflation pressure it is preferable to use the (IN) *derived on the basis of the* (QI) *By Tyre pressure* (S − a).

zzk *By Inflation pressure*

T 6 (A4) *into* (A1) *begins*
zzm Normal load

T 3 (A5) *into* (A1) *begins*
zzn In Kg sq cm
zzp In psi
T 3 (A5) *into* (A1) *ends*

zzq Full load

T 4 (A5) *into* (A1) *begins*
zzr In Kg/sq cm
zzs In psi
T 4 (A5) *into* (A1) *ends*

Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
zzn16 16 Kg/sq cm at normal load
T 6 (A4) *into* (A1) *ends*

zzt *By Weight of casing*

T 7 (A4) *into* (A1) *begins*
zzu In Kg
zzv In lb
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
zzu12=5 12·5 Kg
zzv27=1 27·1 lb
T 7 (A4) *into* (A1) *ends*

zzl *By Tyre size*
Note.—Add the given figure to zz, *replacing the hyphen (-) in the given figure by "A".*
(Illustrative)
zz6=5A16 6·5 — 16
zz9=5A14 9·50 — 14

zzA *By Static load radius*

T 8 (A4) *into* (A1) *begins*
zzB In cm
zzC In inch
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
zzB27=5 27·5 cm
zzC13=9 13·9"
T 8 (A4) *into* (A1) *ends*

zzCZ *By Overall diameter*

T 9 (A4) *into* (A1) *begins*
zzD In cm
zzE In inches
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
zzD75 75 cm.
zzE27 27 inches
T 9 (A4) *into* (A1) *ends*

zzEZ *By Maximum load*

T 11 (A4) *into* (A1) *begins*
zzF In Kg
zzG In lb
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
zzF520 520 Kg
zzG1350 1350 lb
T 10 (A4) *into* (A1) *ends*

zzGZ *By Fabrication* (Structure)

T 1 (A4) *into* (A1) *begins*
zzJ Ply
zzJ1 Single
zzJ2 Two
zzJ3 Three
zzJ4 Four
zzJ5 Cross
zzJ8 Radial
T 11 (A4) *into* (A1) *ends*

zzM *By Material of tyre*
zzM1 Rubber (favoured)
zzM15 Synthetic
zzM6 Nylon

zzP *By Kind of tube*

T 12 (A4) *into* (A1) *begins*
zzR Low pressure
zzS Solid
zzT Pneumatic
zzU Tubeless
zzV Snow
T 12 (A5) *into* (A1) *ends*

z1 *By Brand of tyre*
Note.—To be derived by (AD).
(*Illustrative*)
z1D Dunlop
z1F Firestone
T 5 (A3) *into* (A1) *ends*

z8Z *By Rim of wheel*
By Number of studs (fixing)

T 13 (A4) *into* (A1) *begins*
Note.—Add the given figure to z9 *and read it as an integer.*
(*Illustrative*)
z95 5 studs
z96 6 studs
z9C Centre hub
z9D Ventilated
T 13 (A4) *into* (A1) *ends*

z9Y *By Width*

T 14 (A4) *into* (A1) *begins*
zA In cm
zB In inch
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
zA11 5 11·5 cm
zB4 4·5"
T 14 (A4) *into* (A1) *ends*

zBZ *By Material of rim*

T 15 (A4) *into* (A1) *begins*
zC Pressed steel disc
zD Other alloys
zD2 Castalloy
T 15 (A4) *into* (A1) *ends*

zF *By Number of revolutions per mile or Km* (at 35 mph or 22 km per hr)

Note.—Add the given figure and read it as an integer
(Illustrative)
zF731 731
zF745 745

zFZ *By Track*
T 6 (A3) *into* (A1) *begins*
zG Front
zGA In m
zGB In ft
zH Rear
zHA In m
zHB In ft
zJ Front and rear
zJA In m
zJB In ft
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
zGA56=5 56.5 cm front track
zGB27 27 inch front track
zHA58 58 cm rear track
zHB28 28 inch rear track
T 6 (A3) *into* (A1) *ends*

zK *By Wheel alignment*
zKB Chamber
zKC Caster
zKD Toe-in

zL *By Wheel base*
zLA In cm
zLB In ft
Note.—Add the given figure to the appropriate (IN) *and read it as an integer*
(Illustrative)
zLA206 206 cm
zLB9=2 9′ 2″

zN *By Number of driving wheels*
Note.—Add the given figure and read it as an integer.
(Illustrative)
zN2 2 driving wheels
zN6 6 driving wheels

zP *By Total number of wheels*
Note.—Add the given figure and read it as an integer
(Illustrative)
zP6 6 wheels
zP12 12 wheels

zQ *By Position of wheel*
zQ1 Front
zQ2 Middle
zQ7 Rear
T 5 (A2) *into* (A1) *ends*

zR *By Suspension system*
T 6 (A2) *into* (A1) *begins*
zS *By Control mechanism*
zS1 Automatic height control
zS2 Telescopic damper
zS3 Shock absorber
zS4 Panhard rod
zS6 Antiroll bar
zS8 Radius arm

zSZ *By Spring*
T 7 (A3) *into* (A1) *begins*
zT *By Rate of spring*
zTA In Kg
zTB In lb
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
zTA45=5 45·5 Kg
zTB130 130 lb

zTZ *By Length of spring*
T 16 (A4) *into* (A1) *begins*
zU Normal
zUA In cm
zUB In inch
zV Under load
zVA In m
zVB In feet
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
zUA1=5 1·5 m normal length
zUB4 4 ft normal length
zVA1=8 1·8 m length underload
zVB6 6 ft length underload
T 16 (A4) *into* (A1) *ends*

zVZ *By Shape*

	T 17(A4) *into* (A1) ***begins***	zZG
zW	***By Spring subjected to bending***	zZH
		zZJ
zW1	Single leaf flat spring	zZK
zW2	Double leaf flat spring	
zW3	Rectangular plate	
zW4	Triangular plate	zZM
zW5	Rectangular plate with tapered end	
zW8	Transverse leaf	zZN
zWB	Compound leaf laminate spring	zZP
		zZR
zWC	Laminated triangular plate	zZS
		zZT
zWD	Laminated rectangular plate with tapered leaf end	zZU
		zZV
		zZX
zWF	Laminated trapezoidal plate with tapered leaf end	
zWG	Elliptical	
zWG2	Semi-elliptical	1
zWM	Coiled spring	
zWP	Spiral coil of rectangular cross section	2
zWR	Cylindrical helix of circular cross section	22
		23
zWT	Cylindrical helix of rectangular cross section	24
		25
zX	***By Spring subjected to torsion***	251
		253
zXI	Straight bar of circular cross section	52
		55
zX3	Straight bar of rectangular cross section	56
		58
zY	***By Spring loaded axially***	
zY1	Cylindrical helix of circular cross section	7
		71
zY2	Cylindrical helix of rectangular cross section	77
		78
zY3	Conical helix of circular cross section	
zY5	Conical helix of rectangular cross section	9a
zY8	Truncated conical spring	
	T 17 (A4) *into* (A1) *ends*	
zZA	***By Material of spring***	9aZ
	T 18 (A4) *into* (A1) *begins*	
zZB	Steel	9b
		9b1
	T 6 (A5) *into* (A1) ***begins***	9b2
zZC	Hard drawn	9c
zZD	Oil-tempered	9c4
zZE	Annealed high carbon	9c44
zZF	Chromium vanadium	9c45
	Silicon manganese	
	Flat CR strip	
	Stainless 18-8	
	Chromium stainless	
	T 6 (A5) *into* (A1) ***ends***	
	Other alloys	
	T 7 (A5) *into* (A1) ***begins***	
	Inconel	
	Monel	
	K-monel	
	Z-nickel	
	Phosphor bronze	
	Manganese bronze	
	Brass	
	Rubber	
	T 7 (A5) *into* (A1) *ends*	
	T 18 (A4) *into* (A1) *ends*	
	T 7 (A3) *into* (A1) *ends*	
	By Kind of suspension	
	T 8 (A3) *into* (A1) ***begins***	
	Independent	
	Kingpin	
	Kingpin between double wish bones	
	Ball joint	
	Axle	
	Live axle on cantilever	
	Swinging axle	
	Hydroelastic	
	Hydraulic	
	Hydropneumatic	
	Air	
	T 8 (A3) *into* (A1) *ends*	
	By Position	
	Front suspension	
	Rear suspension	
	Front and rear suspension	
	T 6 (A2) *into* (A1) *ends*	
	By Roof	
	T 7 (A2) *into* (A1) ***begins***	
	By Material of make	
	T 9 (A3) *into* (A1) ***begins***	
	Metal	
	Steel	
	Aluminium	
	Non-metal	
	Glass	
	Fiber glass	
	Tinted glass	

9c5 Plastics
9c7 Cloth
T 9 (A3) *into* (A1) *ends*

9d *By Kind*
9d3 Sun roof
9d5 Observation
9dB Sliding
T 7 (A2) *into* (A1) *ends*

9e *By Window*

T 8 (A2)*into* (A1) *begins*
9f *By Method of operation*
9f2 Manual
9f6 Mechanical (roll-type)
9f8 Power-assisted

9g *By Curvature*
9g1 Flat
9g3 Curved
9g5 Compound curved
9g8 Wrap over

9h *By Material of make*
9h1 Safety glass
9h5 Tinted glass
9h6 Polarised glass
9hF Plastics

9j *By Position*
9j1 Front (Windshield)
9j5 Side
9j7 Rear

9k *By Number*
Note.—Add the given figure and read it as an integer.
(*Illustrative*)
9k4 Four windows
9k6 Six windows
T 8 (A2) *into* (A1) *ends*

9kZ *By Door*

T 9 (A2)*into* (A1) *begins*
9m *By Method of operation*
9m1 Sliding
9m2 Manual
9m6 Mechanical
9m8 Power-assisted

9n *By Position*
9n1 Front
9n5 Side
9n51 Right
9n55 Left

9n7 Rear

9p *By Number*
Note.—Add the given figure and read it as an integer.
(*Illustrative*)
9p2 Two doors
9p4 Four doors
T 9 (A2) *into* (A1) *ends*

9r *By Seat*

T 10 (A2) *into* (A1) *begins*
9s *By Cover of headlining*
9s1 Cloth
9s2 Leather
9s5 Pvc
9s6 Nylon

9t *By Cover of seat*
9t1 Cloth
9t2 Leather
9t5 Pvc

9v *By Kind of seat*
9v1 Bench
9v2 Bucket
9v24 Half bucket
9v3 Adjustable
9v5 Folding
9vB Reclining
9vC Reclining to make a bed
9vD Swivel

9w *By Position*
9w1 Front
9w2 Centre
9w7 Rear
9wB Front facing
9wH Rear facing

9x *By Number*
Note.—Add the given figure and read it as an integer.
(*Illustrative*)
9x4 Four seats
9x6 Six seats
T 10 (A2) *into* (A1) *ends*

9z1 *By Number of decks*
9z2 Single (favoured)
Double

9zB *By Cargo body*

T 11 (A2) *into* (A1) *begins*
9zC *By Capacity*

9zCA	In cu m	94
9zCB	In cu ft	941
	Note.—Add the given figure to the appropriate (IN) and read it as an integer.	95
	(Illustrative)	9B
9zCA7=5	7·5 cu m	9D
9zCB255	255 cu ft	9F
		9H
9zG	*By Floor area*	9K
9zGA	In sq m	9M
9zGB	In sq ft	9P
	Note.—Add the given figure to the appropriate (IN) and read it as an integer.	9A
	(Illustrative)	
9zGA3=7	3·7 sq m	
9zGB37	37 sq ft	9B
9zL	*By Height*	9B1
9zLA	In cm	9B2
9zLB	In ft	9B3
	Note.—Add the given figure to the appropriate (IN) and read it as an integer.	9B4 9B6 9B8
	(Illustrative)	
9zLA120	120 cm	9D
9zLB5=3	5′ 3″	
9zP	*By Width*	9D1
9zPA	In cm	9D2
9zPB	In ft	9D6
	Note.—Add the given figure to the appropriate (IN) and read it as an integer.	9D8 9DC 9F
	(Illustrative)	
9zPA80=5	80·5 cm	9F1
9zPB3=6	3′ 6″	9F4
9zR	*By Length*	9H
9zRA	In cm	
9zRB	In ft	9H5
	Note.—Add the given figure to the appropriate (IN) and read it as an integer.	9H8 9J
	(Illustrative)	9J1
9zRA50	150 cm	9J11
9zRB15=6	15′ 6″	9J2
	By Material of make	9L
91	Steel (favoured)	
92	Aluminium	9L1
93	Plywood	9L15
	Fiberglass	
	Reinforced with steel Plastics	
	By Type of body (for car)	
	Sedan	
	Convertible	
	Hardtop	
	Limousine	
	Station wagon	
	Fast back	
	Jeep	
	(For truck trailer)	
	By Purpose	
	T 10(A3) *into*(A1) *begins*	
	By Body for carrying building equipment	
	Log body	
	Pulpwood body	
	Lumber body	
	Glass (Glazier) body	
	Concrete mixer	
	Bituminous material distributor	
	By Body for carrying construction and repair equipment	
	Dump	
	Hopper	
	Oil field body	
	Rigger	
	Utility body	
	By Body for carrying vehicles	
	Automobile transporter	
	Wreck transporter	
	By Body for carrying garbage	
	Garbage	
	Refuse	
	By Body for carrying livestock	
	Rack	
	Stock	
	Horsevan	
	By Body for carrying liquids	
	Tank	
	Water	

9L16 Oil
9L5 Street flusher
9L7 Brewers body

9N *By Body for carrying food*
9N1 Grain
9N2 Ice
9N3 Ice-cream
9N4 Bottles
9NB Insulated
9NC Refrigerated
9NE Heated

9Q *By Body for carrying passengers*
9Z1 Bus body
9Z2 Coach

9S *By Body for miscellaneous freight*
9S1 Panel
9S12 Sedan delivery
9S3 Ventilated
9S5 Van body
9S52 Furniture
9S8 Multistop

9T *By Special purpose body*
9T2 Fire fighter
9T3 Armoured car
9T8 Mail carrier
9TB Mobile post office
9TD Bookmobile (Librachine, *T* 10 (A3) *into* (A1) *ends*

9U *By Constructional type*
T 11 (A3) *into* (A1) *begins*
9V Platform
9V1 Stake
9W Open box
9W1 Express
9W2 Pick up
9W5 Canopy
9W52 Screen side
9X Camel back (Dray body)
T 11 (A3) *into* (A1) *ends*

9Z07 *By Truck trailer*
T 12 (A3) *into* (A1) *begins*
9Z08 *By Number of axles*
9Z1 Single
9Z2 Two
9Z3 Three

By Axle assembly
9ZB Tandem
9ZC Spread tandem
9ZD Sliding tandem
9ZF Sliding fifth wheel

9ZG *By Kind of trailer*
9ZG12 Semi-trailer
9ZG1 Full trailer
9ZG3 Trailer converter dolly
9ZG4 Low bed
9GZ6 Drop frame
9ZG7 Tilt bed
9ZG8 Pole
T 12 (A3) *into* (A1) *ends*
T 11 (A2) *into* (A1) *ends*

9ZH *By Frame*
T 12 (A2) *into* (A1) *begins*
9ZJ *By Material*
9ZJ1 Welded steel (favoured)
9ZJ2 Aluminium
9ZJ3 High strength and aluminium
9ZJ4 Fiberglass reinforced panel

9ZM *By Articulation*
9ZM1 Straight truck
9ZM2 Articulated

9ZP *By Kind of frame*
T 13 (A3) *into* (A1) *begins*
9ZQ X-frame
9ZR Ladder frame
9ZS Swept hip
9ZT Box-shaped cross section
9ZU Central tube with fork ends
9ZV Double backbone
T 13 (A3) *into* (A1) *ends*

9ZW *By Profile*
9ZW Low
9ZW5 Medium
9ZW8 High

9ZX *By Construction*
Body welded to frame (Conventional)
9ZY Unitised
T 12 (A2) *into* (A1) *ends*

A *By Engine*

B1 *By Cooling*

T 12 (A3) *into* (A2) *begins*

B5 Liquid
B55 Water
B56 Oil
B8 Air
T 12 (A3) *into* (A2) *ends*

BA *By Ignition system*
BAB Battery
Note.—Add the given figure for the voltage to BA and read it as an integer.
(*Illustrative*)
BAB2=5 2·5 V
BAB6 6 V
BAC Compression ignition
BAF Electronic
BAF3 Transistorised
BAH Magneto

BC *By Valve gear*
BC1 Push rod and rocker
BCB Overhead

BE *By Combustion chamber*

T 13 (A3) *into* (A2)*begins*
BF Side valve
BG Turbulent head
BH Overhead valve
BJ Bath-tub head
BK Toroidal
BM M-type
BN Rover cylinder head
BP Swirl type
BP1 Induction swirl
BP2 Compression swirl
BP5 Whirlpool
BR Comet
BS Divided chamber
BS1 Pre-combustion chamber
BS8 Air cell
T 13 (A3) *into* (A2) *ends*

T 13(A2) *into*(A1) *begins*
C *By Fuel injection system*
By Fuel pump
By Oil filter
By Kind

T 1 (A6) *into* (A2) *begins*
C1 Renewable
C4 Gauge strainer in sump
C5 Tecalamite
C8 Full flow
T 1 (A6) *into* (A2) *ends*

C9A
C9D
C9F
CB
CB1
CB2
CB3
CB4
CB5
CB53
CB6
CBA
CBK
CC
CC2
CC6
CC8
CCZ
CD
CD1
CD2
CD6
CDA
CDA
CE
CE1
CE2

By Brand

T 2 (A6) *into* (A2) *begins*
Note.—To be derived by (AD).
(*Illustrative*)
Derad
Fram
T 2 (A6) *into* (A2) *ends*

T 3 (A4) *into* (A2) *begins*
By Kind of fuel pump
Diaphragm type
Plunger type
Solenoid
Jerk type
Electronic
Transistorised
Electrical
T 3 (A4) *into* (A2) *ends*

T 2 (A4) *into* (A3) *begins*
By Brand of pump
Note.—To be derived by (AD).
(*Illustrative*)
Kyosan-Denki
T 2 (A4) *into* (A3) *ends*

By Method of injection
Direct
Metered
Continuous

By Carburetor

T 4 (A4) *into* (A2) *begins*
By Choke
By Method of operation

T 1 (A6) *into* (A3) *begins*
Manual
Power
T 1 (A6) *into* (A3) *ends*

By Brand of choke

T 2 (A6) *into* (A3) *begins*
Note.—To be derived by (AD).
(*Illustrative*)
Aisan
T 2 (A6) *into* (A3) *ends*

By Number of venturi tubes
Single
Double

CF	*By Number of barrels*	
	Note.—Add the given figure and read it as an integer.	
	(*Illustrative*)	GA75
CF2	2 barrels	GB2=4
CF4	4 barrels	
		H
CG	*By Draught direction*	HA
CG1	Downward	HB
CG5	Side	
CH	*By Brand of carburetor*	
	Note.—To be derived by (AD).	
	(*Illustrative*)	HA5363
CHF	Ford	HB450
CJ	*By Number of carburetors*	HZ
	Note.—Add the given figure and read it as an integer.	J
	(*Illustrative*).	J1
CJ2	2 carburetors	J11
CJ4	4 carburetors	J111
	T 4 (A4) *into* (A2) *ends*	J13
		JH
E	*By Fuel*	JV
E01	With antifreeze	JV60
E1	Single fuel	JV90
E2	Dual fuel	
E8	Multifuel	K
EB	Pure liquid	KA
EB5	Pentane	KB
EB6	Hexane	
EB7	Heptane	
EB8	Octane	
EB81	Iso-octane	
EB91	Decane	
EB92	Dodecane	KA40
EB93	Octene	KB17
EB94	Benzene	
EB95	Alcohol	L
ED	Liquid mixture	L1
		L1Z
	T 5 (A4) *into* (A2) *begins*	
EE	Gasoline (favoured)	
EF	Kerosene	
EG	Light diesel oil	
EH	Medium diesel oil	L8
EJ	Heavy diesel oil	L16
ES	Gaseous fuel	
	T 5 (A4) *into* (A2) *ends*	
		M
G	*By Stroke distance*	M2
GA	In mm/sec	M21
GB	In inch/sec	M22
	Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*	M4
	(*Illustrative*)	
	75 mm/sec	
	2·4 inch/sec	
	By Displacement	
	In cu cm	
	In cu in	
	Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*	
	(*Illustrative*)	
	5363 cu cm	
	450 cu in	
	By Cylinder	
	T 14 (A3) *into* (A1) *begins*	
	By Cylinder arrangement	
	In line (favoured)	
	Horizontal	
	Opposed	
	Vertical	
	H type	
	V type	
	60°	
	90°	
	By Cylinder bore diameter	
	In cm	
	In inch	
	Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*	
	(*Illustrative*)	
	40 cm	
	17″	
	By Number of cylinders	
	Single	
	Multiple	
	Note.—Add the given figure to L and read it as an integer.	
	(*Illustrative*)	
	8 cylinders	
	16 cylinders	
	T 14 (A3) *into* (A1) *ends*	
	By Cycle	
	Two stroke	
	Single acting	
	Double acting	
	Four stroke	

N *By Compression ratio*
Note.—Add the given figure.
(Illustrative)
N1=2 1·2
N6=35 6·35

P *By Maximum torque*
PA In Kg-m per sec
PB In lb-ft per sec
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
PA14 14 Kg-m per sec
PB102 102 lb-ft per sec

R *By Thrust*
RA In Kg
RB In lb
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
RA1300 1300 Kg
RB3000 3000 lb

S *By Power*
SA In metric horse power
SB In horse power
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(Illustrative)
SA325 325 metric HP
SB328 328 Horse Power

U *By Supercharging*
U2 Compressor only
U3 Differential charging
U5 Turbo-charging

V *By Mounting of engine*
V1 Front
V2 Centre
V3 Cab-forward-of-engine
V5 Cab-over-engine
V6 Cab-beside-engine
V7 Rear
V8 Transverse

W *By Brand of engine*
Note.—To be derived by (AD).
(Illustrative)

WF Ford
WR Rolls Royce

X *By Kind of engine*
X1 Petrol (gasoline) engine
X2 Diesel engine
X5 Gas turbine
X6 Electrical
X7 Nuclear

Za *By Power generation system*

Za40 40 amperes
Za45 45 amperes

Zb *By Voltage* (Volts)
Note.—Add the given figure and read it as an integer.
(Illustrative)
Zb12 12 volts
Ab25 25 volts

Zc *By Equipment*
Zc1 Battery
Zc2 Alternator
Zc6 Generator

Zd *By Speed*

Ze *By Acceleration*

Zf *By Acceleration through gears*

ZfA Km per hr in ... sec
ZfB Mph in ... sec
Note.—Add the given figure to the appropriate (IN) *and read it as an integer. Add to the resulting* (IN) *the figure for time (in sec) with 'A' interpolated between the two sets of numbers.*
(Illustrative)
ZfA12A2=6 2·6 sec from 0–12 km per hr
ZfB25A3=1 3·1 sec from 0–25 mph

T 13 (A2) *into* (A1) *ends*

T 14 (A2) *into* (A1) *begins*

Note.—Add the given figure and read it as an integer.
(Illustrative)

T 14 (A2) *into* (A1) *ends*

T 15 (A2) *into* (A1) *begins*

T 15 (A3) *into* (A1) *begins*

Zg *By Acceleration from standing to ¼ mile* (in sec)
Note.—Add the given figure and read it as an integer.
(*Illustrative*)
Zg18=4 18·4 sec
Zg32 32 sec
T 15 (A3) *into* (A1) *ends*

Zh *By Maxi speed in each gear*
Zh1 First gear
Zh2 Second gear
Zh21 Overdrive second gear
Zh3 Third gear
Zh31 Overdrive third gear
Zh4 Top gear
Zh41 Overdrive top gear
Zh6 Reverse
Note.—Add the given figure for the speed to 'A' if in km per hour or to 'B' if in mph and read it as an integer. Add the result to the appropriate (IN) *for the gear.*
(*Illustrative*)
Zh1A7 7 Km per hr in first gear
Zh1B16 16 mph in first gsar
Zh4A55 55 Km per hr in top gear
Zh4B110 110 mph in top gear

Zj *By Mean maximum speed*
ZjA In km per hr
ZjB In mph
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
ZjA25 25 km per hour
ZjB76 76 mph
T 15 (A2) *into* (A1) *ends*

ZjZ *By Dimension*
Zk *By Overall height*
ZkA In cm
ZkB In inch
T 16 (A2) *into* (A1) *begins*
Zm *By Ground clearance*
ZmA In cm
ZmB In inch

Zn *By Overall width*
ZnA In meter
ZnB In feet

ZnZ
Zp *By Overhang*
ZpA Front
ZpB In meter
Zq In feet
ZqA Rear
ZqB In cm
In feet

Zr *By Overall length*
ZrA In meter
ZrB In feet
Note.—For a specific dimension add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
ZmA12=5 12·5 cm ground clearance
ZmB5=5 5·5" ground clearance
ZnA2=37 2·37 m width
ZnB7=11 7' 11" width
ZrB13=1 13' 11" length
T 16 (A2) *into* (A1) *ends*
ZrZ *By Weight*

T 17 (A2) *into* (A1) *begins*
Zs *By Weight distribution* (%)
ZsB On front axle
ZsC On centre axle
ZsH On rear axle
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.*
(*Illustrative*)
ZsB56 56% on front axle
ZsH65 65% on rear axle
ZsZ *By Vehicle weight*

T 16 (A3) *into* (A1) *begins* (*for car*)
Zt Dry weight in Kg
ZtA Light (less than 500 Kg)
ZtB Medium (500–1,500 Kg)
ZtC Heavy (over 1500 Kg)
Zu Dry weight in cwt
ZuA Light (less than 19 cwt)
ZuB Medium (10–27 cwt)
ZuC Heavy (over 27 cwt)
Zv Kerb weight in Kg
ZvA Light (less than 600 Kg)
ZvB Medium (600–2,000 Kg)
ZvC Heavy (over 2,000 Kg)
Zw Kerb weight in cwt
ZwA Light (less than 12 cwt)

ZwB Medium (12–30 cwt)
ZwC Heavy (over 30 cwt)
Zx Laden weight in Kg
ZxA Light (less than 800 Kg)
ZxB Medium (800–2,500 Kg)
ZxC Heavy (over 2,500 Kg) ZtA4200
Zy Laden weight in cwt ZyD320
ZyA Light (less than 15 cwt)
ZyB Medium (15–35 cwt)
ZyC Heavy (over 35 cwt)
Note.—Add the given figure to the appropriate (IN) *and read it as an integer.* (*Illustrative*) ZzX ZzY
ZtB600 600 Kg dry weight
Zv778 778 Kg kerb weight Zz1
ZyA14=25 14·5 cwt laden weight

(*for Truck and Bus*)
Zt Dry weight in Kg
ZtA Light (less than 4,500Kg) Zz3
ZtB Medium(4,500–8,000 Kg) Zz55
ZtC Light heavy (8,000–12,000 Kg)
ZtD Heavy (over 12,000 Kg) Z2
Zu Dry weight in cwt Z21
ZuA Light (less than 80 cwt) Z25
ZuB Medium (80–150 cwt) Z28
ZuC Light heavy (150–220 cwt) Z3
ZuD Heavy (over 220 cwt) Z31
Zv Kerb weight in Kg Z37
ZvA Light (less than 5,000Kg) Z38
ZvB Medium (5,000–10,000 Kg) Z5
ZvC Light heavy (10,000–15,000 Kg) Z51 Z53
ZvD Heavy (over 15,000 Kg) Z54
Zw Kerb weight in cwt Z56
ZwA Light (less than 90 cwt) Z57
ZwB Medium (90–180 cwt) Z5B
ZwC Light heavy (180–250 cwt) Z5D Z5E
ZwD Heavy (over 250 cwt) Z5F
Zx Laden weight in Kg Z5H
ZxA Light (less than 6,000Kg)
ZxB Medium (6,000–12,000 Kg) Z6 Z64
ZxC Light heavy (12,000–18,000 Kg) Z65 Z651
ZxD Heavy (over 18,000 Kg) Z68
Zy Laden weight in cwt
ZyA Light (less than 100 cwt)
ZyB Medium (100–200 cwt) ZA
ZyC Light heavy (200–300 cwt)
ZyD Heavy (over 300 cwt) ZB

Note.—Add the given figure to the appropriate (IN) *and read it as an integer.* (*Illustrative*)
4,200 Kg dry weight
320 cwt laden weight
T 16 (A3) *into* (A1) *ends*
T 17 (A2) *into* (A1) *ends*

By Purpose

T 18 (A2) *into* (A1) *begins*
By Environment

T 17 (A3) *into* (A1) *begins*
By Gradient climb (%)
Note.—Add the given figure to 'Zz' and read it as an integer. (*Illustrative*)
3% gradient
55% gradient

By Latitude
Tropical
Subtropical
Polar

By Altitude
Sea level
Mountain
Snow level

By Physiography (Terrain)
Flat
Undulating
Rough
Hilly
Mountainous
Desert
Jungle
Forest
Marshy
Muddy

By Weather condition
Dry
Rain
Sleet
Snow
T 17 (A3) *into* (A1) *ends*

By Transport

T 18 (A3) *into* (A1) *begins*
By Passenger transport

T 19 (A4)*into* (A1)*begins*

ZC *By Number of passengers/animals*
Note.—Add the given figure and read it as an integer.
(*Illustrative*)
ZC3 3 passengers
ZC45 45 passengers

ZD *By Passenger category*
ZD1 School children
ZD4 Convict
ZD5 Police
ZD8 Military personnel
T 19 (A4) *into* (A1) *ends*

ZE *By Animal transport*
ZE1 Cattle
ZE2 Horse
ZE3 Pig
ZE5 Sheep
ZE6 Fowl

ZF *By Cargo transport*

T 20 (A4)*into* (A1)*begins*

ZG *By Weight of cargo*
ZGA In Kg
ZGB In lb
Note.—Correct the given figure to the hundredth place, divide it by 100, *add the result to the appropriate* (1N) *and read it as an integer.*
(*Illustrative*)
ZGA54 5,400 Kg
ZGB104 10,400 lb

ZGZ *By Cargo category*

T 8 (A5) *into* (A1) *begins*

ZH Building material
ZH1 Dry
ZH11 Log
ZH12 Earth
ZH13 Brick
ZH14 Stone
ZH15 Cement
ZH18 Metal
ZH1( ) Other
Note.—To be derived by (SD).
(*Illustrative*)
ZH1(D291) Plywood
ZH2 Semi-solid
ZH26 Concrete
ZH27 Asphalt
ZH28 Tar
ZH3 Construction and repair equipment
ZH4 Vehicle
ZH5 Garbage and refuse
ZHB Chemicals
ZHE Liquid

T 3 (A6) *into* (A2) *begins*

ZHF Flammable
ZHF1 Alcohol
ZHF4 Petrol
ZHF5 Kerosene
ZHF6 Oil and fat
ZHG Non-inflammable
ZHG5 Water
ZHG7 Milk
ZHG8 Beverage
T 3 (A6) *into* (A2) *ends*

ZHJ Food
ZHJ1 Grain
ZHJ2 Vegetable
ZHJ3 Meat
ZHJ4 Perishable
T 8 (A5) *into* (A1) *ends*
T 20 (A4) *into* (A1) *ends*

ZK *By Recreational use*
ZK1 Racing
ZK2 Rallying
ZK3 Camping
ZK5 Touring
ZK53 Caravan
ZK57 Globe-trotting

ZL *By Medical/Hospital use*
ZL1 Ambulance
ZL3 Mortuary
ZL5 Blood mobile
ZL6 X-ray unit
ZL8 Dental
ZLB Isolation

ZM *By Funeral use*
ZM1 Hearse
ZM3 Funeral car

ZP *By Mass communication purpose*
ZP1 Educational
ZP3 Audio-visual
ZP6 Advertising

ZR *By Portability*
ZR5 Floatable
ZR8 Air-droppable

ZS	*By Service*		*Note.—(1) For twentieth century: Use the last two digits of the year.* (2) *For nineteenth century: Use the last two digits of the year with "m" prefixed to them.* (*Illustrative*)
	T 21 (A4) *into* (A1) *begins*		
ZT	*By Service area*		
ZT1	Village		
ZT2	City		
ZT3	Suburban		
ZT5	Inter-city		
ZT6	Inter-district	m96	1896
ZT8	Trans-continental	65	1965
ZV	*By Service category*		*By Model*
ZV1	Utility		*Note.—To be derived by* (AD).
ZV5	Police		(*Illustrative*)
ZV53	Patrol	E225	Electra 225
ZV6	Prison	F	Fleetwood
ZV8	Taxi cab		
ZVF	Commercial	A	*By Company name*
ZVJ	Civil		*Note.—To be derived by* (AD).
ZVM	Military		(*Illustrative*)
ZVP	Amphibian		Buick
ZVS	Multipurpose	B	Cadillac
	T 21 (A4) *into* (A1) *ends*	C	*Note.—The* (IN) *for the Brand is to be got by combining the* (IN) *for the Company name, for the Model, and Year, in that sequence, the component* (IN) *being connected by* "=".
	T 18 (A3) *into* (A1) *ends*		(*Illustrative*)
	T 18 (A3) *into* (A1) *ends*		
(1)	*By make*		
	Note.—To be derived by (GD).		
	(*Illustrative*)		
(42)	Japan make		
(73)	US make		
		(B=E225 =66)	Buick Electra 225, 1966
(A)	*By Brand*		
	By Year	(C=F= 65)	Cadillac Fleetwood, 1965

992 EXAMPLES

1 The examples given in this section have been selected to demonstrate the capacity of the design methodology to provide co-extensive (CN) for very specialised micro subjects going with the (BS) Motor Vehicle Production. It will be seen that the combination of (QI) may be as high as 102 (QI) in a document. Every document may not, however, present that many number of (QI). It has been mentioned in Sec 112 that at one extreme a document may require only the (BC) Number for its classification while at the other extreme another document may require the attachment to the (BC) Number a large number of (IN).

2 Due to the incidence of a large number of isolate ideas in the documents on Motor Vehicle Production selected as examples, the (CN) may appear to be inordinately long. This does not mean that the (CN) constructed according to the depth version of the Colon Classification will be inordinately long for every document. The new methodology provides for the construction of expressive co-extensive (CN) for macro as well as micro subjects. This facilitates the rapid, pinpointed retrieval of the entries.

3 As mentioned in Sec 951, a new method of rendering the Feature Headings has been adopted in the examples. This is only an experiment.

Its helpfulness for use in a periodical documentation list has to be examined. It may be noted that the Feature Heading for a document derived on the basis of a co-extensive (CN) by the use of the Chain Procedure exposes almost all the relevant isolate ideas incident in the document classified. Such a Feature Heading may serve the purpose of an informative abstract. An abstract may be needed only to give such information as to the status of the author or the standard of the work, — that is ideas that are not represented in the (CN) and therefore omitted in the Feature Heading.

1 D93C1,(B=W=C)-ZK1Z7B11=4-ZuB11=4-Zr13-Zn5=4-Zm5=5-Zk2=9-X1-S170A68-L6-B8-95-zL90 *where*

D93C1,	MOTOR CAR,
(B=W=C)-	BRAND: Borg Warner Cycolac,
ZK1-	PURPOSE: Racing,
Z7B11=4	WEIGHT: Dry weight 11·4 cwt,
Zr13-Zn5=4-Zm5=5-Zk2=9-	DIMENSION: Overall length 13′, Overall width 5′ 4″, Ground clearance 5′ 5″, Overall height 2′ 9″,
X1-S170A68-L6-B8-	ENGINE: Petrol engine, Maximum power 170 bhp at 6,800 rpm, Cylinders 6, Air-cooled,
95,	BODY: Plastics,
zL90	WHEEL: Wheel base 90″

PLASTICS BODY for racing sports car. (Atom world. 28, 6: 1965; 28).

2 D93C1,(F=M)-ZC4-X1-L6-H170-9ZJ1-9F-9D-9B-9w70 (v1) -9w10 (v2) -zk6 *where*

D93C1,	MOTOR CAR,
(F=M)-	BRAND: Ford Mustang,
ZC4-	PURPOSE: Passenger transport, Number of passengers 4,
X1-L6-H170-	ENGINE: Petrol engine, Cylinders 6, Displacement 170 cu in,
9ZJ1-9F-9D-9B-	BODY: Frame: Welded steel; Hardtop, Convertible, Sedan,
9w70(v1)-9w10(v2)-	SEAT: Rear seat: Bench type; Front seat: Bucket type,
zk6	TRANSMISSION: Automatic

FORD TAILORS SPORTY Mustang to meet driver specs. (SAE j. 72, 5; 1965; 36-46).

3 D93C1,(F=Z=66)-ZwB26-ZsH42=5-ZsB57=5-Zr15=5-Zn5=1-Zm6=5-Zk4=1-X1-S112A48-P137A30-N9=1-L6-JVGO-H211-G2=33-CHZ=381VT-CD9B1=1-CB66-BK-BCB-BC1-770 (2-zWR-z52)-710 (zWR-zS6-zS2) -zL9=7-zH4=1-zG4=9-zC-zB4=5-z95-z26=71A13-zxE-zv-zu4-z13=346-zsE1-zsD1=412-zsC2=414-zsB3=163-zq2-zmB-zkF-zk1-zhB=B-zaB9-w5-u16=5-t20=6-r4=75-pJ36-kZG-kVR-kVJ-kVG-kV5-kR0(N9=91-D139)-kQ0(N9=63-D214)-aR15-a1H24-a1B24 *where*

D93C1,	MOTOR CAR,
(F=Z=66)	BRAND: Ford Zephyr 1966,
ZwB26-ZsH42=5-ZsB57=5-	WEIGHT: Kerb weight 26 cwt, Weight distribution on rear axle 42·5%, Weight distribution front axle 57·5%
Zr15=5-Zn5=1-Zm6=5-Zk4=1-	DIMENSION: Overall length 15′ 5″, Overall width 5′ 1″, Ground clearance 6·5″, Overall height 4′ 1″,

X1–S112A48–P137A30–
–N9=1–L6–JV60–
H211–G2=33–CHZ=381
VT–CD9B1=1–CB66–
BK–BCB–BC1– ENGINE: Petrol engine, Maximum power 112 bhp at 4,800 rpm, Maximum torque 137 lb-ft per sec at 3,000 rpm, Compression ratio 9·1, Cylinders 6, Cylinder arrangement V-type 60°, Displacement 211 cu in, Stroke distance 2·33" per sec; Carburetor: Zenith 381 VT brand, Choke diameter 1' 1"; Fuel pump: AC operated; Combustion chamber: Toroidal; Valve gear: Overhead pushrod and rocker,

770(2–zWR–zS2)–710
(zWR–zS6–zS25)– SUSPENSION: Rear: Independent, Cylindrical helical spring, Telescopic damper; Front: Cylindrical helical spring, Anti-roll bar, Coaxial telescopic damper,

zL9=7–zH4=1–zG4=9–
zC–zB4=5–z95–zz6=
7A13– WHEEL: Wheel base 9' 7", Track: Rear 4' 1"; Front 4' 9"; Rim: Pressed steel disc, Width 4' 5", 5-stud fixing; Size 6·70–13

zxE–zv–zu4–zt3=346–
zsE1–zsD1=412–zsC2
=414–zsB3=163–zq2–
zmB–zkF· zk1–zhB=B–
zaB9– TRANSMISSION: Gearbox: Synchromesh type, Reverse speed, Forward speed 4; Gear ratio: Reverse 3·346 to 1, Top 1 to 1, Third 1·412 to 1, Second 2·144 to 1, First 3·163 to 1; Final drive: Double arm: Rear axle: Sprung; Shift: Manual, Hydrostatic; Clutch: Borg and Beck; Engagement: Diaphragm, Diameter 9",

w5–u16=5–t20=6–r4
=75–pJ36– STEERING: Recirculating ball and nut, Steering wheel diameter 16·5", Gear ratio 20·6 to 1; Number of turning circles lock-to-lock 4·75, Diameter of turning circles between kerbs 36',

kZG–kVR–kVJ–kVG–
kV5–kR0(N9=91–
D139)–kQ0(N9=63–
D214)– BRAKE: Girling, Hand assistance, Servo, Vacuum, Hydraulic; Rear brake: Disc diameter 9·91", Swept area 139 sq in; Front brake: Disc diameter 9·63", Swept area 214 sq in,

aR15–a1H24–a1B24 MAINTENANCE FACTOR: Fuel tank capacity 15 Imp gallons; Tyre pressure: Normal driving: Rear 24 psi, Front 24 psi.

FORD V-six models: Analysis of the design of the largest of the British Ford range. (Autom eng. 1966 May; 164–72).

4 D93C1,(GT=B)–ZyB18=3–ZwB15=3–ZsH43=7–ZsB56=3–Zr13=1–
Zn5–Zm6=7–Zk4=5–Zh4B15=8–Zc10(b12–a38)–X1–S63A58–P67A
35–N9–L4–K2=73–H70–G3–CH2S–CB66–C8–C1–BCB–BC1–9ZV–
9ZJ6–9s5–770(25–zW6–zS2)–710(23–zWM–zS6–zS2)–zJ4–zC–zB3=5–
z94–z1D=C41–zzU–zz5=2A13–zxE–zu4–zt15=4–zsE4=11–zsD5=
73–zsC8=87–zsB15=4–zv1–zn4=11–zL7=7=5–zf1–ze4–zc6=25–w8–
u15–r3=5–pJ25–pC28–kZG–kR0(M7–G1=25–D55)–kQ0(N9–G1=
25–D144)–fH10–B50–f1X1–f1U–f1T–f12C–c44–c31–c231–b54–aR10–
aN9=5–aM7–aK60–aJ60–aG1–aF12–aC1=5–aB4B6–a7H26–a7B24–
a3H26–a3B24–a1H22–a1B20 *where*

D93C1,
(GT=B)–
ZyB18=3–ZwB15=3–
ZsH43=7–ZsB56=3– MOTOR CAR,
BRAND: GT Bond,
WEIGHT: Laden weight 18·3 cwt, Kerb weight 15·3 cwt, Weight distribution on rear axle 43·7%, Weight distribution on front axle 56·3%,

Zr13=1-Zn5-Zm6=7-Zk4=5
DIMENSION: Overall length 13′ 1″, Overall width 5′, Ground clearance 6″ 7″, Overall height 4′ 5″.

Zh4B15=8-
SPEED: Maximum on top gear 15·8 mph,

Zc10(b12-a38)-
POWER SUPPLY: Battery 12 v, 38 amp,

X1-S63A58-P67A35-N9-L4-K2=73-H70-G3-CH2S-CB66-C8-C1-BCB-BC1-
ENGINE: Petrol engine, Maximum power 63 bhp at 5,800 rpm, Maximum torque 67 lb-ft at 3,500 rpm, Compression ratio 9 to 1, Cylinders 4, Bore diameter 2·73″ Displacement 70 cu in, Stroke distance 3″ per sec, Carburetor: 2SU brand; Fuel Pump AC operated; Oil filter: Full Flow renewable; Valve gear: Overhead pushrod and rocker,

9ZV-9ZJ6-
BODY: Double backbone frame, Fibre-glass reinforced panel,

9s5-
SEAT: Pvc headlining,

770(25-zW6-zS2)-710(23-zWM-zS6-zS2)
SUSPENSION: Rear: Independent, Swinging axle, Transverse leaf spring, Telescopic damper; Front: Independent, Kingpin between double wishbones, Coiled spring, Antiroll bar, Telescopic damper,

zL7=7=5-zJ4-zC-zB3=5-z94-z1D=C41-zzU-zz5-2A13-
WHEEL: Wheel base 7′ 7·5″; Front and rear track 4′; Rim: Pressed steel disc, Diameter 3′ 5″, 4-stud fixing; Tyre: Dunlop C41, Tubeless, Size 5·2-13,

zxE-zu4-zt15=4-zsE4=11-zsD5=73-zsC8=87-zsB15=4-zr1-zn4=11-zf1-ze4-zc6=25
TRANSMISSION: Gearbox: Synchromesh type; Forward speed 4; Gear ratio: Reverse 15·4 to 1, Top 4·11 to 1, Third 5·73 to 1, Second 8·87 to 1, First 15·4 to 1, Hypoid bevel gear, Final drive gear ratio 4·11 to 1; Clutch: Disc type, Single, Dry, Diameter 6·25″.

w8-u15-r3=5-pJ25-pC28-
STEERING: Rack and pinion, Steering wheel diameter 15″; Number of turning circles lock-to-lock 3·5, Diameter of turning circles between kerbs 25′, Diameter of turning circles between walls 28′,

kZG-kR0(M7-G1=25-D55)-kQ0(N9-G1=25-D144)-
BRAKE: Girling; Rear brake: Drum diameter 7″, Shoe width 1·25″, Swept area 55 sq in; Front brake: Disc diameter 9″, Shoe width 1·25″, Swept area 144 sq in,

fH10(B50)-f1X2-f1U-f1T-f12C-c44-c31-c231-b54-
SAFETY PROVISION: Head light 50 watts; Windshield washer: Plunger type; Windshield wiper: Self-parking; Seat belt with anchorage,

c44-c31-c231-b54-
COMFORT: Heating facility, Fresh air ventilation, Single speed fan, Interior carpet trimming,

aR10-aN9=5-aM7-aK60-aJ60-aG1-aF12-aC1=5-aB4B6-a7H26-a7B24-a3H26-a3B24-a1H22-a1B20
MAINTENANCE FACTOR: Fuel tank capacity 10 Imp gallons, Cooling system oil 9·5 pints, Engine sump oil 7 pints, Oil change every 6,000 miles, Final drive oil 1 pint, Slip differential oil change every 12,000 miles, Gearbox oil 1·5 pints, Grease application 4 points every 6,000 miles; Tyre pressure: Full load driving: Rear 26 psi, Front 24 psi;

Fast driving: Rear 26 psi, Front 24 psi; Normal driving: Rear 22 psi, Front 22 psi

BOND EQUIPE GT 1,147 CC. (Autocar., 1964 Jan 3; 12–6).

5 D93C1,(P=T=64)-Zn6=1-X1-S140A20-L6-JV-CJ1-9ZS-9B-9p4-zL9=7-zz6=5A14-zb14

where

D93C1,	MOTOR CAR,
(P=T=64)-	BRAND: Pontiac Tempest 1964,
Zn6=1-	DIMENSION: Overall width 6′ 1″,
-S140A20-L6-JV-CJ1-	ENGINE: Petrol engine, Maximum power 140 bhp at 2,000 rpm, Cylinders 6, Cylinder arrangement V-type, Carburetor 1,
S-9B-	BODY: Swept hip frame, Sedan,
4-	DOOR: 4
z9=9-zB14-zz6=5A14	WHEEL: Wheel base 9′ 9″; Rim width 14″, Tyre size 6·50–13.

LAGERGREN (J H). Redesigned tempest uses separate frame. (SAE j. 72, 4; 1964 April; 48–52).

6 D93C1 (V=V=66)-ZwB14=5-Zr13=5=6-Zn5=3-X1-S47A52-P62A28-L6-K3-H110-9ZY-9t5-zL7=8-zJ4=3-z1V-zz5=5A14-w8-t15=1-r3=2-kZG-kR0 (M8-K7-K1-G1=25-D35)-kQ0 (M8-L2-K7-G1=25-D65)-fH1-f9L-f9b

where

D93C1,	MOTOR CAR,
(V=V=66)-	BRAND: Vauxhall Viva 1966,
ZwB14=5-	WEIGHT: Kerb weight 14·5 cwt,
Zr13=5=6-Zn5=3-	DIMENSION: Overall length 13′ 5·6″, Overall width 5′ 3″
X1-S47A52-P62A28-L6-K3-H110-	ENGINE: Petrol engine, Maximum power 47 bhp at 5,200 rpm, Maximum torque 62 lb-ft at 2,800 rpm, Cylinders 6, Bore diameter 3″, Displacement 110 cu in,
9ZY-	BODY: Unitized construction,
9t5-	SEAT: Pvc cover,
zL7=8-zJ4=3-z1V-zz5=5A14-	WHEEL: Wheel base 7′ 8″, Track: Front and Rear 4′ 3″, Tyre: Viva brand size 5·50–14,
w8-t15=1-r3=2-	STEERING: Rack and pinion, Gear ratio 15·1 to 1 Number of turning circles lock-to-lock 3·2,
kZG-kR0(M8-K7-K1-G1=25-D35)-kQ0 (M8-L2-K7-G1=25-D65)-	BRAKE: Girling, Rear brake: Drum diameter 8″, Trailing shoe, Leading shoe, Shoe width 1·25″, Swept area 35 sq in; Front brake: Drum diameter 8″, Number of shoes 2, Trailing shoe, Shoe width 1·25″, Swept area 65 sq in,
fH1-f9L-f9b	SAFETY PROVISION: Head light, Lucas, Rectangular.

VAUXHALL NEW body structure and front and rear suspensions and larger 1159 cm³ engine for the Viva model. (Automobile engineer, 1966 Nov; 479–83).

7 D93C1,(V=D)-ZVP-Z5F-Z57-Zz60-ZuB10-Zr2=6-Zk2=6-Zj25-X1-M4-L2-H43-BAH-B8-zk6-zf8

where

D93C1,	MOTOR CAR,
(V=D)-	BRAND: Van Doome's DAF,
ZVP-Z5F-Z57-Zz60-	PURPOSE: Amphibian, Marshy mountainous terrain, 60% gradient climb,

ZuB10–	WEIGHT: Dry weight 10 cwt,
Zr2=6–Zk2=6–	DIMENSION: Overall length 2′ 6″, Overall height 2′ 6″,
Zj25–	SPEED: Mean maximum speed 25 mph
X1–M4–L2–H43–BAH–B8–	ENGINE: Petrol engine, Four stroke, Cylinders 2, Displacement 43 cu in, Magneto ignition, Air-cooled,
zk6–zf8	TRANSMISSION: Automatic shift, Multiple disc clutch,

"PONY" GALLOPS on land and water. (Autom world. 28, 4; 1965; 31).

8 D93D1,(F=B)–ZVS–ZuA38–ZsH53–ZsB47–Zr12=8–Zm6=6–X1–S105A63–P146A38–L6–H170–9zR4 = 1–9zP5 = 1–9zC33–770(zW1)–710(zWM)–zJ4=9–zy4–ztZ2–zu3–zsD1–zsC1=9–zsB3=4–zkF–zjG–pJ34 *where*

D93D1,	MOTOR TRUCK,
(F=B)–	BRAND: Ford Broneo,
ZVS–	PURPOSE: Multipurpose,
ZuA38–ZsH53–ZsB47–	WEIGHT: Dry weight 38 cwt, Weight distribution on rear axle 53%, Weight distribution on front axle 47%,
Zr12=8–Zm6=6–	DIMENSION: Overall length 12′ 8″, Ground clearance 6′ 6″,
X1–S105A63–P146A38–L6–H170–	ENGINE: Petrol engine, Maximum power 105 bhp at 6,300 rpm, Maximum torque 146 lb-ft per sec at 3,800 rpm, Cylinders 6, Displacement 170 cu in,
9zR4=1–9zP5=1–9zC33–	CARGO BODY: Length 4′ 1″, Width 5′ 1″, Capacity 33 cu ft,
770(zW1)–710(zWM)–	SUSPENSION: Rear: Leaf spring; Front: Coiled spring,
zJ4=9–	WHEEL: Front and rear track 4′ 9″,
zz4–zu3–ztZ2–zsD1–zsC1=9–zsB3=4–zkF–zjG–	TRANSMISSION: Gearbox: 4-wheel drive, 3 forward speed, 2 transfer case; Gear ratio: Third 1 to 1, Second 1·9 to 1, First 3·4 to 1; Manual shift, Synchronised counter shaft,
pJ34	STEERING: Diameter of turning circles between kerbs 34′.

GESCHELIN (J). Fords versatile Broneo, 4-wheel drive, utility has 3 models. (Autom industr. 1965 July 15; 45).

9 D93D3, (F=705)–Zz3–ZyD1518–Zn8–Zk13–Zj70–X5–S600A50–9ZJ6–9ZB–9zR40–C871–c83–c41–c31–c25 *where*

D93D3,	TRUCK TRAILER
(F=705)–	BRAND: Ford 705,
Zz3–	PURPOSE: Gradient climb 3%,
ZyD1518–	WEIGHT: Laden weight 1,518 cwt,
Zn8–Zk13–	DIMENSION: Overall width 8′, Overal height 13′,
Zj70–	SPEED: Mean maximum speed 70 mph,
X5–S600A50–	ENGINE: Gas turbine, Maximum power 600 bhp at 5,000 rpm,
9ZJ6–9ZB–	TRAILER BODY: Frame: Fibreglass reinforced panel, Tandem axle assembly,
9ZR40–	CARGO BODY: Length 40′,

c871–c83–c4–c31–c25 COMFORT: Slight pressurisation, Air-conditioning, Defroster, Fresh air ventilation, Blower equipment.

MADDOX (C F). Super transport turck to match a super highway system. (SAE j. 73, 7; 1965 July; 58–61).

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4 Sec 941 —— and ——. Locomotive production engineering: Depth classification. (Lib sc. 3; 1966; Paper P, Sec 52).

5 Sec 951 *ibid.* (Sec 8).

6 Sec 51 53 NEELAMEGHAN (A) and GOPINATH (M A). Grouping of quasi isolates. (DRTC seminar (4) (1966). [Papers and proceedings]. Paper K).

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9 Sec 941 —— and ——. Zero increases hospitality. (DRTC seminar (3) (1965). [Papers and proceedings]. Paper D, Sec 5).

10 Sec 921 *ibid.* (Sec 62).

11 Sec 941 NEELAMEGHAN (A) and SANGAMESWARAN (S V). Array division with packet notation. (DRTC seminar (4) (1966). [Papers and proceedings]. Paper L.

12 Sec 01 Sec 941 RANGANATHAN (S R). Design of depth classification: Methodology. (Lib sc. 1; 1964; Paper A).

13 Sec 323 ——. Elements of library classification. Ed 3. 1962. Sec E44.

14 Sec 31 ——. *Ibid.* (Sec H11).

15 Sec 112 ——. *Ibid.* (Sec H13).

16 Sec 111 RANGANATHAN (S R). Freely faceted classification and depth classification. (DRTC seminar (4) (1966). [Papers and proceedings]. Paper G).

17 Sec 51 ——. Hidden roots of classification. (Lib sc. 4; 1967; Paper A, Sec 8).

18 Sec 12 ——. Prolegomena to library classification. Ed 3. (In press).

19 Sec 43 ——. *Ibid.* (Chap EB to EK).

20 Sec 941 ——. *Ibid.* (Chap FD).

21 Sec 81 ——. *Ibid.* (Part F).

22 Sec 51 ——. *Ibid.* (Part F and Chap RM and RN).

23 Sec 911 ——. *Ibid.* (Part K).

24 Sec 61 ——. *Ibid.* (Sec HD4).

25 Sec 61 ——. *Ibid.* (Sec RK8).

26 Sec 112 ——. *Ibid.* (Sec SE5).

27 Sec 43 ——, NEELAMEGHAN (A) and GOPINATH (M A) Production engineering of reciprocating internal combustion engine. (Lib sc. 2; 1965; Paper B).

28 Sec 921 ——. *Ibid.* (Sec 7).

29 Sec 221 SOCIETY OF AUTOMOTIVE ENGINEERS. Commercial motor vehicle nomenclature. (SAE J687. 1953).

30 Sec 222 WORLD BOOK encyclopedia. 1962. V1.

STATEMENT OF MAN HOURS

SN	Particulars	Man Hours
1	Reading of reference books on the subject	18
2	Scanning through periodicals .. }	
21	Scanning 500 articles .. }	66
22	Formulation of kernal terms (for 75 articles) }	
3	Preparation of schedule	210
4	Classification of 75 articles	25
5	Feature Heading work	20
6	Preparation of the index to schedule	30
7	Writing of the text of the article	60
8	Typing work	60
9	Revision work	16
		505