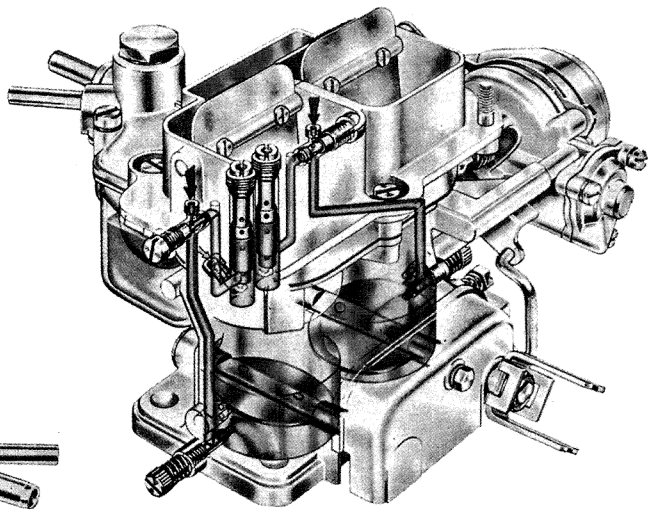
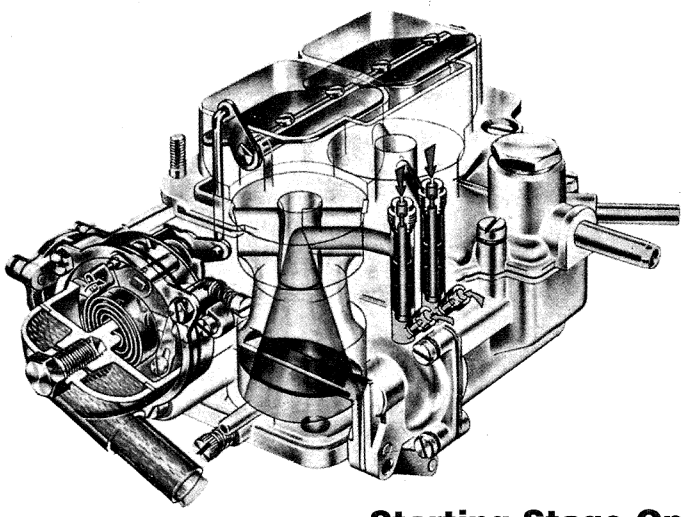
Carburettor

WEBER

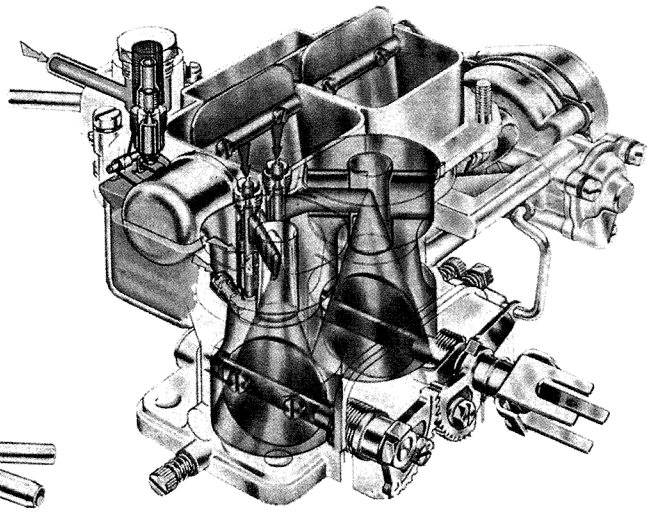
Series 40 DFA



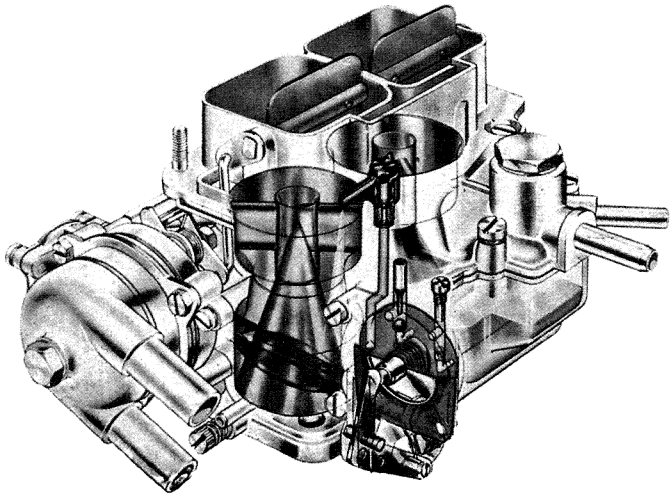
Idle Speed Operation



Starting Stage Operation



Full Power Operation



Acceleration Stage Operation

Part Two

Weber Carburettor Adjustment Settings

By "adjustment settings" is meant a list of values assigned to the calibrated parts of a carburettor application on a given engine. If the carburettor is a multi-barrelled unit with **synchronised** opening of the throttles, each barrel will have the same adjustment settings; if throttle opening is of the **differential** type, then the settings are distinguished in two lists as **primary** and **secondary**.
Now, by considering a typical carburettor, say the **40 DCOE**, it will be possible to explain the influence of the calibrated parts on engine operation and, with slight variations only, this information may be extended to the entire range of Weber carburettors.

40 DCOE Carburettor
Adjustment setting example
This is a **horizontal** or **sidedraft** carburettor having two identical barrels with synchronised throttles, fitted as a dual-unit application on a 4-cylinder, 1300 cc. engine providing 90 HP at 6000 rpm. It is a sports car power plant on which each carburettor barrel supplies fuel independently to one engine cylinder **(single-feed system)**.

Adjustment Settings

1)	Main Venturi	29	mm
2)	Auxiliary Venturi	4.5	mm
3)	Main fuel jet	1.10	mm
4)	Main air bleed (corrector) jet	2.00	mm
5)	Emulsion tube	F16	
6)	Idle speed fuel jet (fed from bowl)	0.50/F11	mm
7)	Accelerating pump jet	0.35	mm
8)	Accelerating pump drain jet	0.70	mm
9)	Accelerating pump flow rate (per stroke, per barrel)	0.20	cc
10)	Choke jet	0.60/F5	mm
11-12)	Needle valve (w/damper)	1.50	mm
13)	Fuel level: distance between float top and cover with gasket	8.5	mm
14)	Weight of float	26	grams
15)	Flared air horn extensions		none

To illustrate the **DCOE** Series carburettors, a section is shown in **Fig. 29** and a colour chart on page 46. It is always possible to identify the main calibrated parts of a carburettor in spite of the different systems adopted

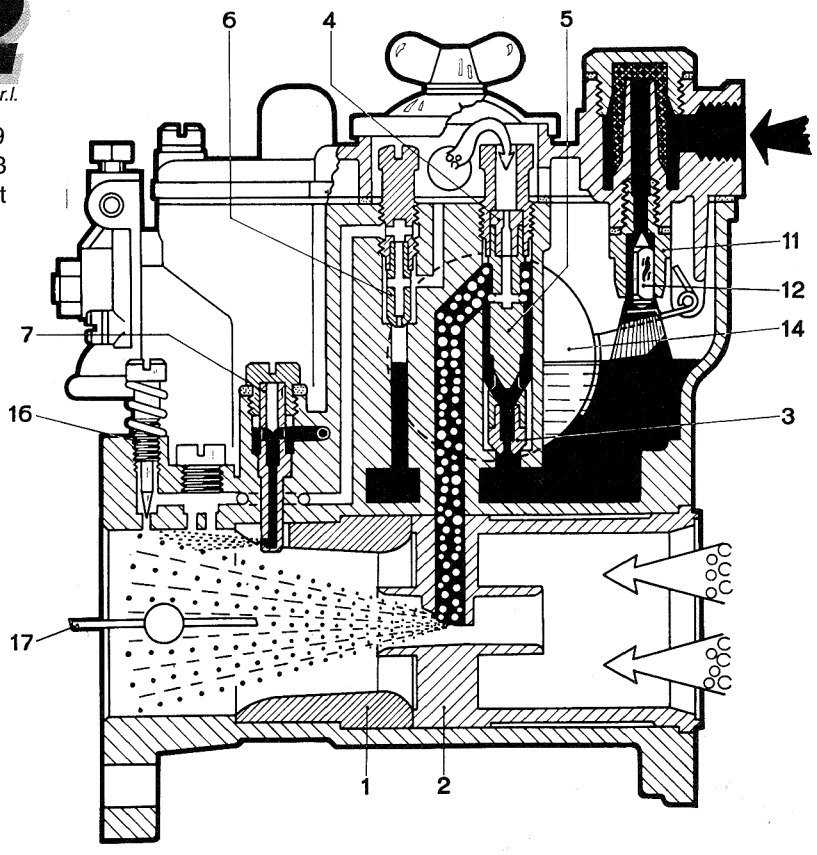


FIG. 29
Section through a DCOE Series carburettor
1 Main Venturi - 2 Auxiliary Venturi - 3 Main fuel jet - 4 Main air jet - 5 Emulsion tube - 6 Idle speed fuel jet - 7 Accelerating pump jet - 11 Needle valve - 12 Valve needle - 14 Float - 16 Idle mixture adjusting screw - 17 Throttle valve.

when, for instance, the barrels are vertical. In the Weber carburettor designation, the first number indicates the barrel diameter in mm at throttle level and is followed by a group of code letters and, sometimes, by a second number completing the identification.
Examples:
– **40 DCOE 32**: horizontal (sidedraft) carburettor with two 40 mm barrels.
– **28/36 DLE 2**: carburettor with two barrels, **28 mm primary and 36 mm secondary**.
Parts are described below in the same order as given under the **adjustment setting** list on previous page.

1) Main or primary Venturi - Fig. 30

The main Venturi diameter – in this case, 29 mm – is referred to the narrowest internal section (throat) and is selected from the results of tests run on the engine. The diameter chosen may be:
– **greater**, when maximum power at high rpm and maximum road speed are desired, or
– **smaller**, when better pick-up is desired with a penalty on maximum power.
In fact, the task assigned to the main Venturi is to increase the vacuum acting on the carburettor main circuit in order to draw in and atomise the mixture; the consequence is, however, an increased resistance encountered by the flow through the carburettor. The sharper the passage section variations, the more evident are the effects of this resistance. The following relationship is thus used in calculations:
– **Main Venturi diameter** = barrel diameter x 0.7 . . . 0.9.
The barrel diameter depends on engine and application specifications, and for this reason it will not be possible to give any detailed description here. **However, as a preliminary selection criteria, it will prove useful to refer to the Weber Catalogue and Adjustment Setting Tables where also the other elements needed for a correct adjustment may be found.**
For an acceptable adjustment setting, any reduction in main Venturi diameter **must be accompanied** by a reduction in the diameter of the main (pilot) jet to prevent excessive mixture enrichment, as described later.
The main Venturi bears a number, stamped on its **air cleaner side**, showing its major striction size or smallest diameter. When the main Venturi is cast integral with the carburettor body this diameter is **stamped on the outside face of the body casting**, as

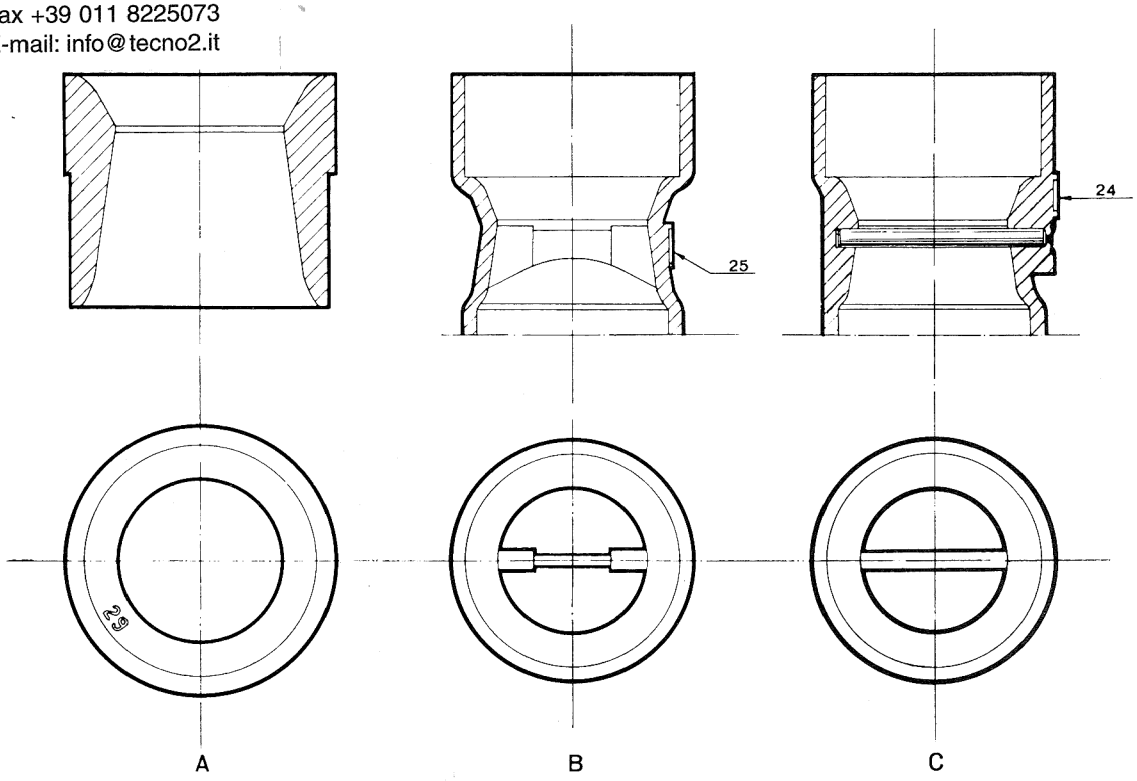


FIG. 30
Main Venturis - In A, the main Venturi for a series DCOE carburettor having a 29 mm diameter. In B, section of a carburettor having an incorporated main Venturi with baffle for better mixture distribution and 25 mm diameter. In C, another carburettor section in which, in lieu of the baffle, a round bar serves the same purpose; the diameter is 24 mm.

is the case, for instance, of units **30 DIC** and **26 IMB**. Two graphs are provided for an approximate determination of main Venturi diameters: the first **(Fig. 31)** covers current types of 2 to 6 cylinder engines fitting a single-barrel carburettor and the second **(Fig. 32)** covers sports engines designed on the single-feed system, namely, one carburettor barrel to each

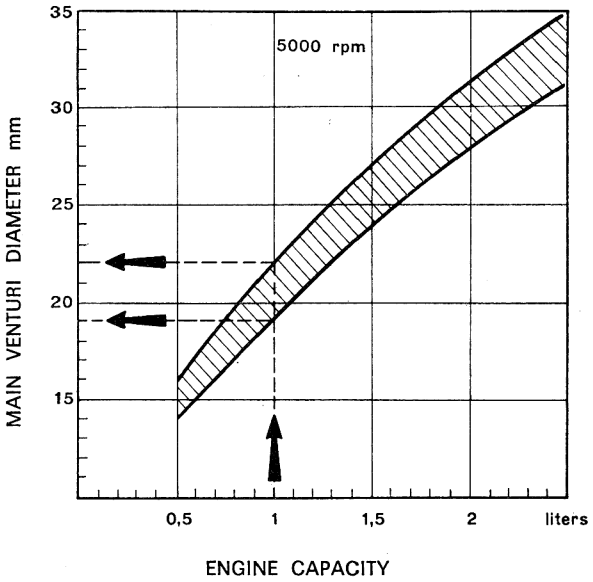


FIG. 31
Main Venturi diameter selection chart for 4-stroke, 1 to 6 cylinder engines having maximum output at around 5000 rpm. All engines fed by one single-barrel down- or side-draft carburettor, without supercharger. If the engine has 2 cylinders select a Venturi corresponding to twice the engine capacity.
Examples: a 1-litre, 4-cylinder engine requires a 19-22 mm dia. Venturi; a 1-litre, 2-cylinder engine requires a 27-32 mm dia. Venturi.

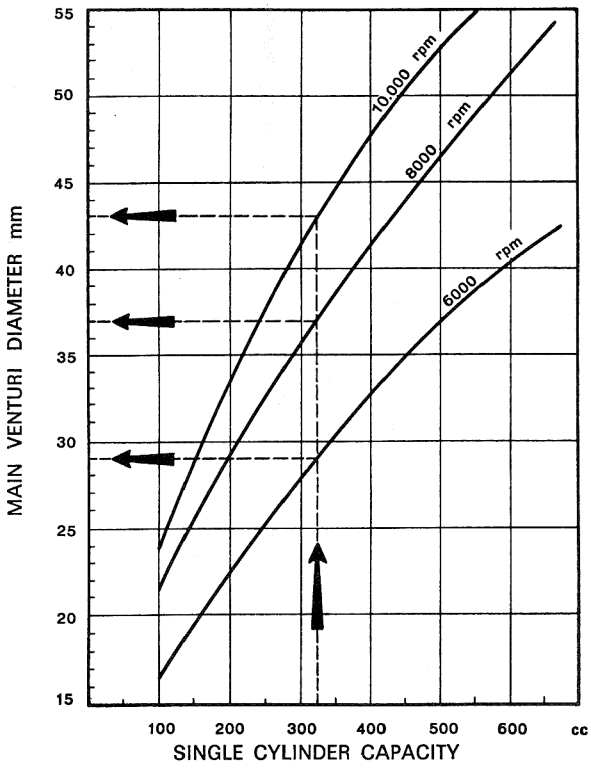


FIG. 32
Main Venturi diameter selection chart for 4-stroke sports engines without supercharger and with feed by one down- or side-draft carburettor to every cylinder. The three curves plotted refer to maximum output speed rates of 6000, 8000 and 10,000 rpm. Example: a 4-cylinder, 1300 cc engine will have 325 cc unit capacity and will require Venturis of 29 mm dia. at 6000 rpm, 37 mm dia. at 8000 rpm and about 43 mm dia. at 10,000 rpm.

cylinder. In both graphs, engines operate on the four-stroke cycle and are not fitted with superchargers.

2) Auxiliary or secondary Venturi - Fig. 33

The value stamped in different locations refers to the narrowest section **T** of the spray nozzle through which the mixture flows and indicates that the cross-sectional area is the same as the one of a hole having the same diameter, say 4.5 mm as in A and B. The more commonly adopted diameters fall in the range between 3 and 5 mm, depending on different requirements: the

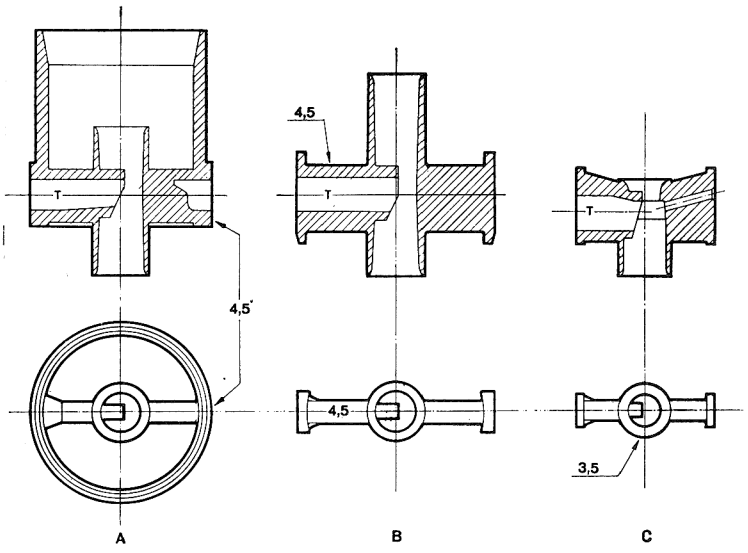


FIG. 33
Auxiliary Venturi - in A for DCOE series carburettors, in B for IDA series carburettors and in C for ICR series carburettors. T Spray nozzle tube minor section.

influence of the flow passage section is felt more markedly at high rpm rates. For special purposes, such as a desirable reduction in "mixture rejection" caused by engine "pulsating" induction, the elongated type of auxiliary Venturi is adopted on sports cars. In other cases, it proves beneficial – for improved mixture distribution – to give an asymmetric shape to the auxiliary Venturi portion nearest the throttle.
For the smaller carburettors, a single diameter rating is factory-set and cannot be changed.

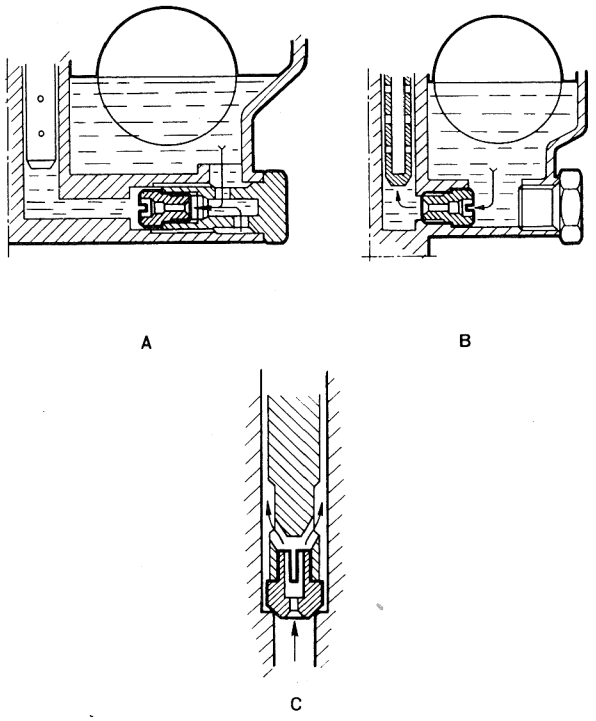


FIG. 34
Main jets - in A the jet is fitted in a special holder, in B it is screwed in carburettor body casting, in C it is co-axial with the emulsion tube as in the DCOE series carburettors.

3) Main jet - Fig. 34

This is a calibrated component of great importance which is controlled with extreme care by measuring the **flow rating** of every single jet: the figure stamped on its side represents the **nominal diameter** in 1/100 of mm of the bore through which the fuel passes and **must not** be measured or cleaned with any pointed metal tool. The diameter – common values range between **0.80** and **1.80 mm** – must be chosen according to the main Venturi, the air bleed jet, the number of cylinders to be fed, the grade of fuel used, etc. Useful though approximate data for a preliminary choice may be found in the graph of **Fig. 35**.
A recommended procedure for testing purposes is to start with the larger diameter jet, then reducing the diameter according to requirements.
On the basis of a correct adjustment setting, it may be said that every **1 mm** increase in main Venturi diameter will call for an increase of about **0.05 mm** in the main jet diameter.

Whenever the diameter of the main jet, or of any other jet, must be increased or decreased, it will be necessary to change the jet(s) with **genuine Weber spare**(s) and avoiding any use of pointed tools, etc.

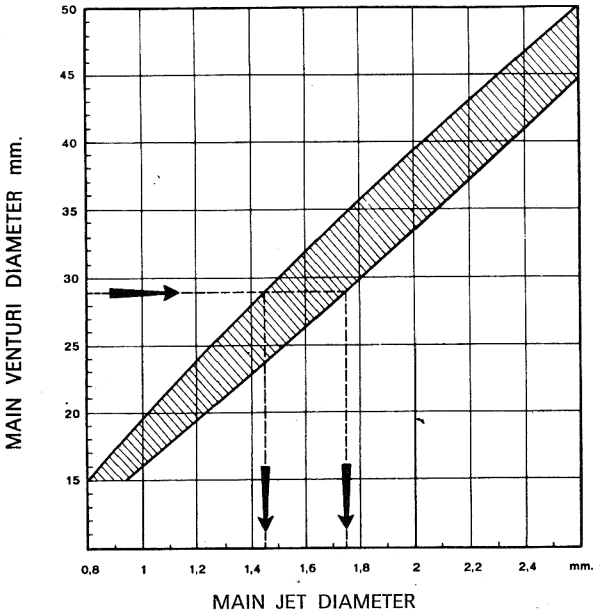


FIG. 35
Graph for the selection of the main jet diameter as a function of main Venturi diameter, with 2.00 mm diameter as the datum figure for the air bleed jet.
Four-stroke, Otto-cycle engines.
The main Venturi considered in the chart feeds 4 or 6 cylinders; if the cylinders fed are only 2, the jet diameter found must be multiplied by 0.90. In case it feeds just one cylinder (sports applications) the multiplication coefficient will be 0.75.
Example: if a 29 mm dia. main Venturi feeds 4 or 6 cylinders it will require a main jet having a diameter of 1.45 to 1.75 mm; if it feeds only one cylinder the jet diameter will fall down to 1.10 or 1.30 mm. As these values are purely indicative, it is recommended to start the tests with the larger diameter jet, then reduce the size as needed.

4) Air correction jet - Fig. 36

The more commonly adopted diameters for this jet fall in the **1.50 to 2.30 mm** range; by increasing the diameter of this jet, the mixture is **weakened** more at higher than lower engine rpm rates whereas by increasing the diameter of the main jet the mixture is **enriched** uniformly at both high and low engine rpm rates.

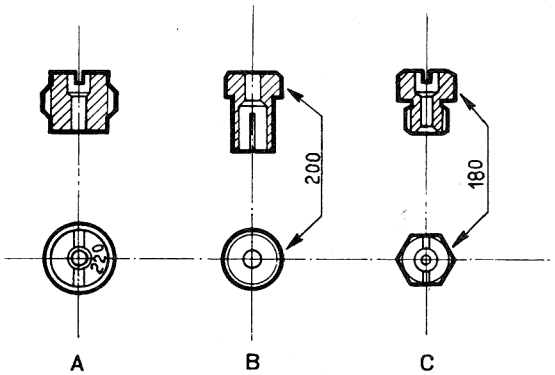


FIG. 36
Air correction jet - For ICP series carburettors (A), for DCOE series carburettors (B) and for DCD series carburettors (C).

The influence of the two jets thus used to best advantage in controlling adjustment setting and, for small variations, a **0.15 mm** increase in the air correction jet diameter may be equivalent to an **0.05 mm reduction** in the main jet diameter, considering the more common adjustment settings.

5) Emulsion tube

Its task is to emulsify the previously metered air issuing from the bleed jet with the fuel coming from the main jet. Its influence is more marked at small and average throttle opening angles and during accelerations (pick-ups). Significant factors are:

– **Location and size** of the orifices nearest the air bleed jet

– **Maximum outside diameter**

– **Location and size** of orifices nearest the main jet.

Some indicative information is provided below in tabulated form as an aid in selecting the right type of emulsion tube. Designation codes are subdivided in three columns, one for each series of tubes used by Weber. Designations – for instance F11 – are not progressive but only indicative and there are also some performance differences between the tubes grouped in any of the blocks.

Important note - Frequently, any change in emulsion tube must be accompanied by a variation in the diameter of the main jet or air correction jet.

Calibrated parts -
The Weber part numbering system

All types of parts in a carburettor are given a basic five figure number which relates to the "family" or group to which they belong. After the five figure number there follows a three digit number which identifies the particular part in question. Sizes are usually expressed in millimetres or fractions of a millimetre. For example, a fifty (point five mm) idle jet would be shown thus .050. A

Indicative table for emulsion tube selection

	Weber Part Numbers		
	61440...	61450...	61455...
Usual Application	 for: 40-46 IDA (3V) 40 IF (3V) and a lot of the remaining carb. types	 only for: DCOE-DCNF IDF-IDA (2V) DATRA-DFTA DMTR-DMTRA carb. types	 only for: DCD-DCZ carb. types
Current Usage	F2-F3-F6-F7 F8-F9-F15 F16-F20-F21 F24-F26-F33 F34-F35	F2-F3-F4-F7 F9-F11-F14 F15-F16	F8-F13-F23 F26-F30-F33
For mixture enrichment at low rpm or during slight accelerations (tubes without orifices at top)	F3-F5-F7-F21	F7	F23-F30
For mixture weakening at low rpm or during slight accelerations (tubes with orifices at top)	F20-F33-F34	F2-F3-F11 F14-F15-F16	F8-F26-F33
Tubes with many orifices for high rpm mixture richness reductions when air bleed jet is larger than 2.00 mm	F8-F16-F20	F11-F19	F8-F9-F31
When mixture enrichment for slight accelerations is needed, the fuel reserve in emulsion well must be increased: this is obtained by fitting a tube having small outside diameter, orifices located prevailingly in the lower portion and a larger size air bleed jet to prevent excessive mixture richness at high rpm	F3-F5-F25	F7-F8	F13
Tubes for very large main fuel jets or for alcohol-based fuels	F2-F20 F24-F25 F26	F2-F3-F4-F7 F17	F8-F10 F29

135 (one point three five mm) would be shown .135 as the size exceeds one millimetre.

The basic numbers for calibrated parts are as follows:

– Emulsion tubes	=	61440, 61450, 61455
– Aux. venturis	=	68819 ÷ 71124
– Chokes	=	71502 ÷ 73204
– Main jets	=	73401, 73405, 73801
– Idle jets	=	74401 ÷ 74839
– Acc. pump jets	=	76201 ÷ 76801
– Air correction jets	=	77201 ÷ 77502
– Needle valves	=	79401 ÷ 79516

For better choice, here below and on successive pages, there are drawings of all Weber emulsion tubes fitted on all range of carburettors.
Drawing and relevant tables show the following measures:

– Height
– External diameter
– Diameter of the internal channel
– Number and diameters of orifices.

At the end of the drawings there is a conversion table where is possible to find all emulsion tubes "F" designation in progressive order.

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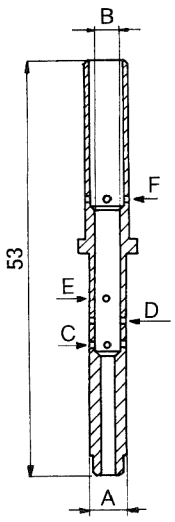
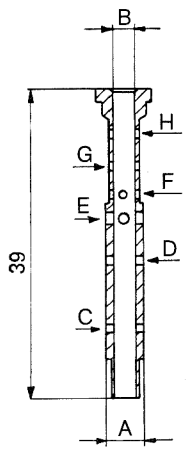
Emulsion tubes

Part number 61440...

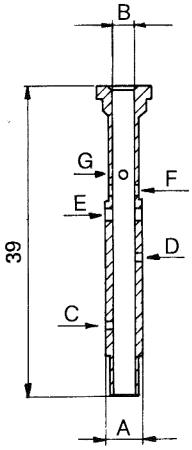
Part Number	Type	mm.		Nr. holes x diameter (1/100 of mm.)							
		A	B	C	D	E	F	G	H	I	L
61440.120	F3	4.5	3.5	4x125	2x100	2x100	4x100				
61440.150	F1	4.5	2.75	1x100	1x100	2x140	2x100				
.151	F26	4.5	2.75	1x100	2x100	4x140	4x100				
.153	F49	4.5	2.75	1x100	1x100	2x140	2x100	2x100	2x100		
.154	F58	4.5	2.75	2x100	2x100	2x140	2x100	2x100	2x100		
61440.155	F63	4.5	2.75	1x100	1x100	2x150	2x150	2x125			
61440.166	F2	4.5	2.75	4x100	4x100	4x140	4x100				
61440.181	F3	4.5	2.75	4x100	4x100	4x140	4x100				
.182	F5	4.25	2.75	4x100	4x100	4x140	4x100				
61440.196	F4	4.75	2.75	4x100	4x100	4x140	4x100				
.197	F70	5	2.75	4x100	4x100	–	–	4x120	4x120		



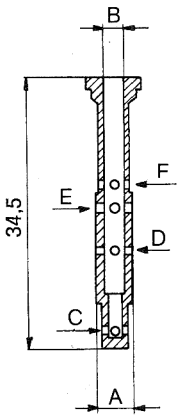
61440.120



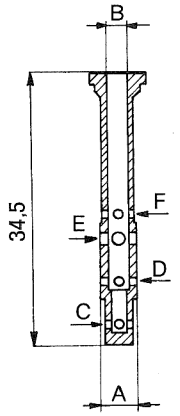
61440.150/151/153/154



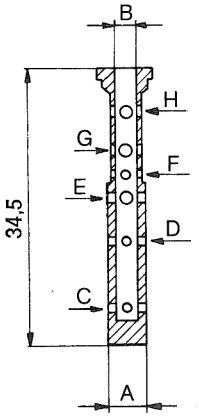
61440.155



61440.166



61440.181/182

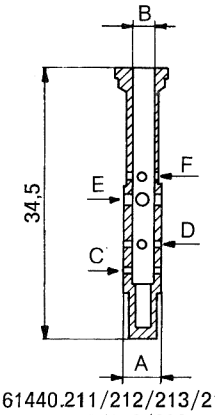


61440.196/197

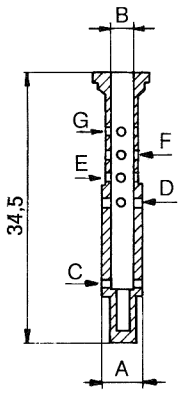
Emulsion tubes

Part number 61440...

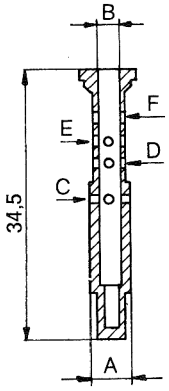
Part Number	Type	mm.		Nr. holes x diameter (1/100 of mm.)							
		A	B	C	D	E	F	G	H	I	L
61440.211	F6	4.25	2.75	2x100	4x100	4x140	4x100				
.212	F8	5	3	2x125	4x125	4x140	4x100				
.213	F24	4	2.75	2x100	4x100	4x140	4x100				
.217	F53	4.5	2.75	2x100	4x100	4x140	4x115				
.218	F56	4.5	2.75	2x100	4x100	4x140	4x150				
.219	F57	4.5	2.75	2x100	4x100	4x140	4x130				
.223	F80	4	2.75	2x100	4x100	4x140	4x150				
61440.216	F50	4.5	2.75	–	4x140	4x140	4x140	4x140			
.224	F81	4.5	2.75	4x140	4x140	4x140	4x140	4x140			
61440.220	F66	4.5	2.75	4x160	4x120	4x120	–				
.222	F78	4.5	2.75	4x160	2x120	2x120	2x120				
61440.226	F7	4.5	2.75	4x100	4x140	4x100					
61440.229	F87	4.5	2.75	2x100	4x100	4x140	4x150	4x150			
61440.241	F9	4.5	3.5	2x100	2x100	2x100	2x115				
.246	F51	4.5	3.5	2x100	2x100	2x100	2x115	4x100			
.249	F75	4.5	3.5	2x100	2x100	2x100	4x115				
61440.242	F40	4.5	3.5	2x100	2x100	2x100	2x115				



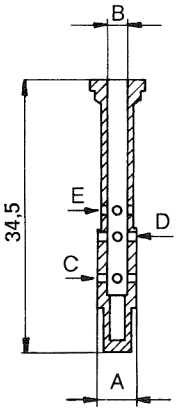
61440.211/212/213/217
218/219/223



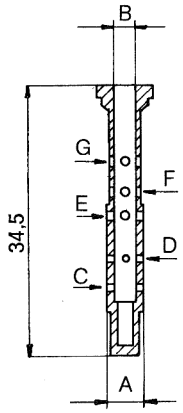
61440.216/224



61440.220/222



61440.226



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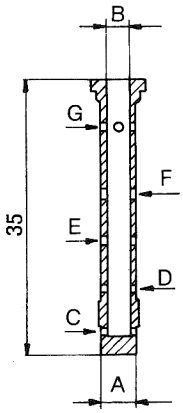
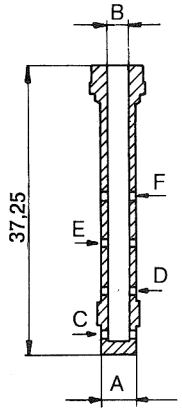


61440.241/246/249



61440.242

Emulsion tubes

Part number 61440...

Part Number	Type			Nr. holes x diameter (1/100 of mm.)							
		A	B	C	D	E	F	G	H	I	L
61440.243	F42	4.5	3.5	2x100	2x100	2x100	2x115	–	1x50		
.224	F47	4.5	3.5	2x100	2x100	2x100	2x115	–	2x100		
.245	F48	4.5	3.5	2x100	2x100	2x100	2x115	4x75	2x100		
61440.247	F54	4.5	3.5	4x110	4x110	4x110	4x120				
61440.261	F10	4.75	3.5	2x100	2x100	2x100	2x115				
61440.281	F11	4.5	3.5	2x100	2x100	2x100	4x125				
61440.301	F14	5	3	2x115	4x115	2x115					
.302	F43	5	3	2x115	4x140	2x115	2x120				
.303	F73	5	3	2x115	4x140	4x140	4x140				
.304	F74	5	3	2x115	4x140	2x115	2x120	2x100			
.305	F84	4	3	2x115	4x140	4x140	4x140				
61440.321	F15	4.75	3.50	–	2x115	2x115	4x115	4x115	–		
.328	F68	4.75	3.50	2x100	2x115	–	4x115	4x115	4x150		
61440.323	F52	4.65	3.50	2x115	2x115	4x115	2x75				

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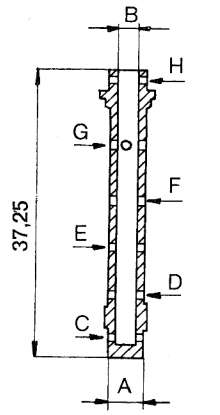
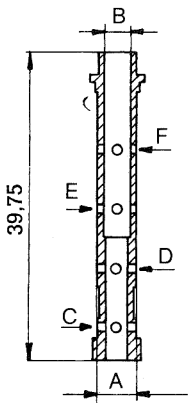
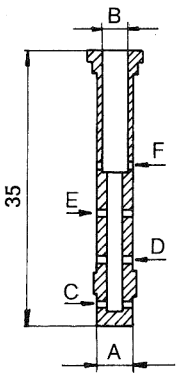


61440.243/244/245



61440.247



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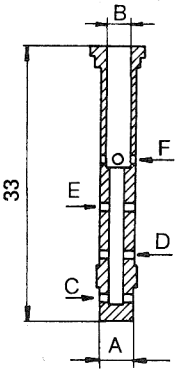
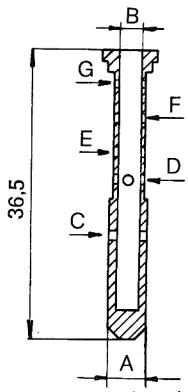
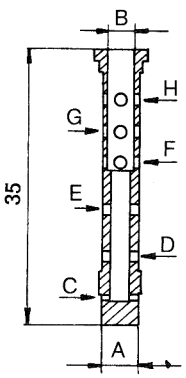


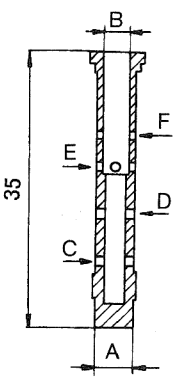
61440.281



61440.301/302/303
304/305



61440.321/328

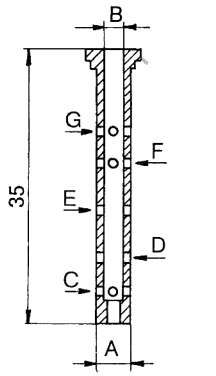


61440.323

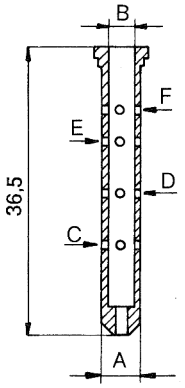
Emulsion tubes

Part number 61440...

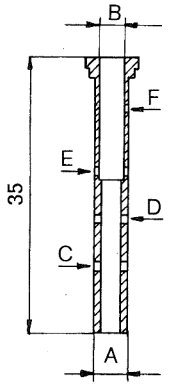
Part Number	Type	mm.		Nr. holes x diameter (1/100 of mm.)							
		A	B	C	D	E	F	G	H	I	L
61440.325	F60	4.1	2.50	–	2x115	2x115	4x115	4x115			
.326	F61	4.1	2.50	–	2x115	2x115	4x115	–			
.329	F82	4.1	2.50	4x100	2x115	2x115	4x115	4x115			
61440.341	F16	4.75	3.25	4x115	4x115	4x115	–				
.343	F71	4.75	3.25	4x115	4x115	4x115	4x115				
.344	F85	4.75	3.25	4x140	4x115	4x115	4x115				
61440.351	F17	4.5	3.25	2x115	2x115	2x115					
.352	F38	4.5	3.25	2x115	2x115	2x115	1x125				
61440.356	F18	4.65	3.5	2x115	2x115	2x115	4x115	4x115	–		
.357	F67	4.65	3.5	2x115	2x115	2x115	4x115	4x115	4x150		
61440.359	F86	4.65	3.5	4x115	2x115	2x115	1x115	4x140			
61440.365	F20	4.5	3	4x115	4x115	4x145	4x145				
61440.371	F21	4.5	2.75	4x100	4x140	4x100	2x100	–			
.372	F23	4.5	2.75	4x100	4x140	4x100	2x100	2x100			



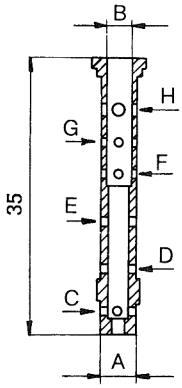
61440.325/326/329



61440.341/343/344



61440.351/352



61440.356/357

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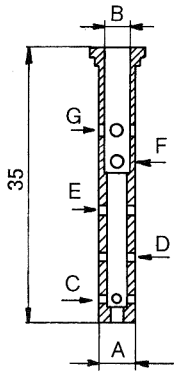
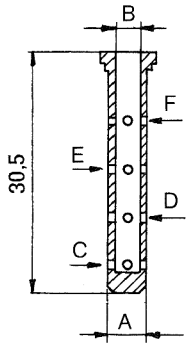
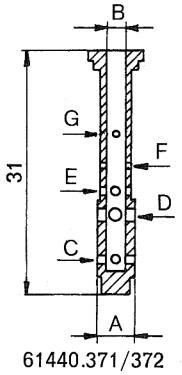


61440.359



61440.365



61440.371/372

Emulsion tubes

Part number 61440...

Part Number	Type	mm.		Nr. holes x diameter (1/100 of mm.)							
		A	B	C	D	E	F	G	H	I	L
61440.452 .471	F3 F2	4.5 4.5	2.75 2.75	2x100 2x100	4x100 4x100	4x140 4x140	4x100 4x100	2x120 –			
61440.454	F77	4.7	3.7	4x130	4x100	4x100	4x100	4x100	4x130	4x150	2x100
61440.488	F25	4	2.75	4x140	4x140	2x100					
61440.501	F29	4.5	3.5	4x100	4x100						
61440.502	F33	4.5	3.5	4x120	4x120						
61440.515	F30	4.5	3.5	2x100	2x100	2x100	2x115	1x120			
61440.525 .526	F34 F35	4.5 4.5	2.75 2.75	2x100 –	2x100 2x100	2x100 2x100	2x100 –				

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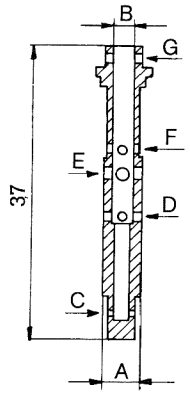
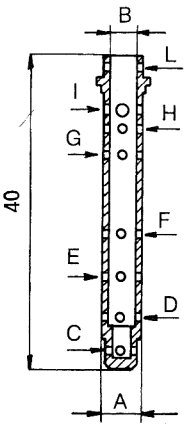
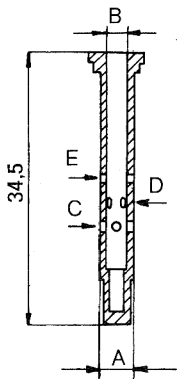


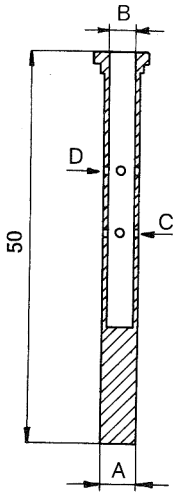
61440.452/471



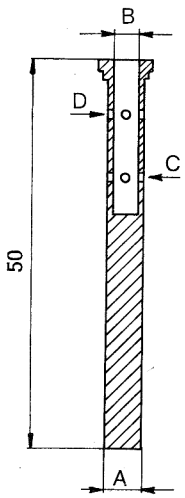
61440.454



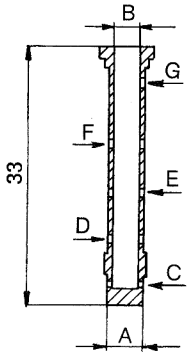
61440.488



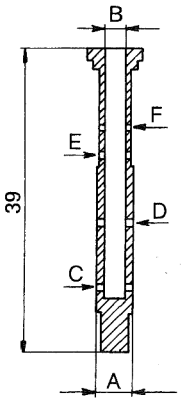
61440.501



61440.502



61440.515

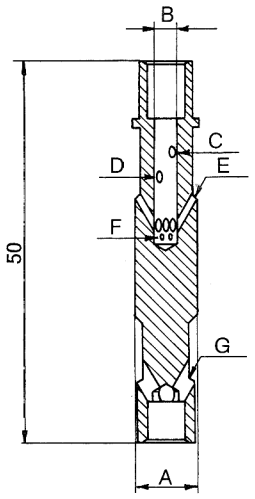


61440.525/526

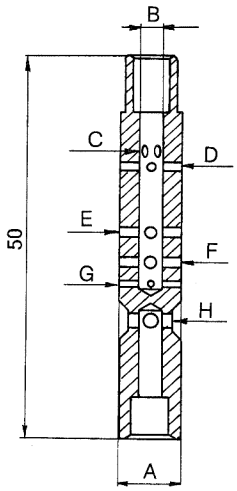
Emulsion tubes

Part number 61450...

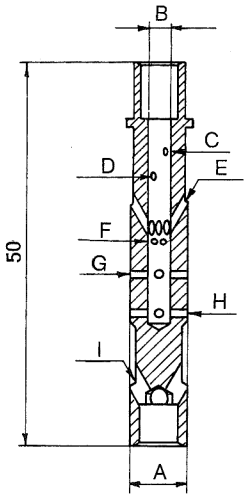
Part Number	Type	mm.		Nr. holes x diameter (1/100 of mm.)							
		A	B	C	D	E	F	G	H	I	L
61450.026	F1	7.5	3	2x100	–	8x100	–	4x250			
.027	F2	7.5	3	2x100	2x100	8x100	–	4x250			
.028	F3	7.5	3	2x100	2x100	8x100	4x100	4x250			
.029	F5	7.5	3	–	2x100	8x100	4x100	4x250			
.030	F9	8.2	3	2x100	2x100	8x100	–	4x250			
.031	F11	8	3	2x100	2x100	8x100	4x100	4x250			
.032	F15	8	3	2x100	2x100	8x100	–	4x250			
61450.036	F50	8.1	3	4x110	4x110	4x100	4x100	4x80	4x200		
61450.051	F4	7.5	3	2x100	2x100	8x100	4x100	4x100	4x100	4x250	
.052	F17	6.5	3	2x100	2x100	8x100	4x100	4x100	4x100	4x250	
.053	F20	7.5	3	2x100	2x100	8x100	4x100	4x100	–	4x250	
.054	F34	7.5	4	2x100	2x100	8x100	4x100	4x100	4x100	4x250	
61450.057	F41	8.1	3	2x80	4x250	4x100	4x100	4x80	4x200		
.058	F47	8	3	2x80	4x250	4x100	4x100	4x80	4x200		
61450.071	F6	8.3	3	4x100	4x100	4x100	4x100	4x100	4x250		
61450.091	F7	7.5	3	–	8x100	4x100	4x250				
.092	F8	7.5	3	2x100	8x100	4x100	4x250				
61450.111	F10	7.5	3	4x100	8x100	4x250					



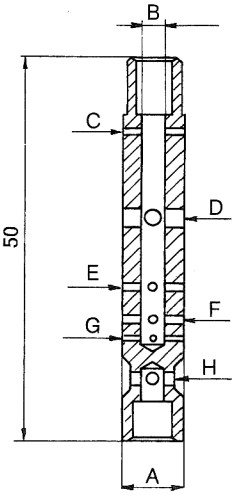
61450.026/027/028/029/
030/031/032



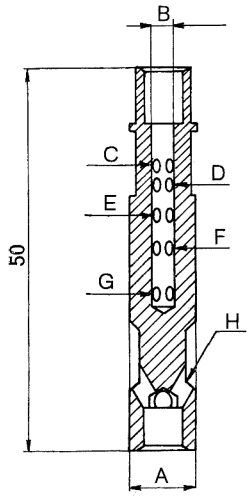
61450.036



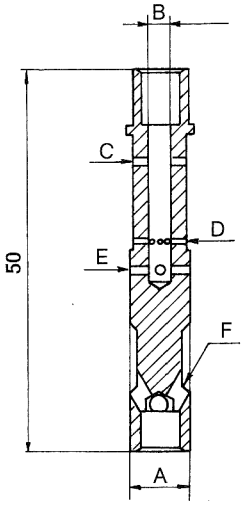
61450.051/052/053/054



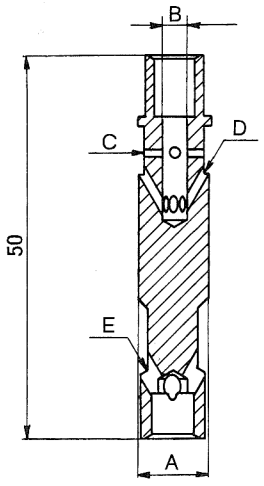
61450.057/058



61450.071



61450.091/092



61450.111

Emulsion tubes

Part number 61450...

Part Number	Type	mm.		Nr. holes x diameter (1/100 of mm.)							
		A	B	C	D	E	F	G	H	I	L
61450.131	F12	7.5	5	8x100	4x250						
61450.166	F14	8.2	3	8x100	4x250						
61450.167	F49	8.2	3	2x125	2x80	2x80	4x90	4x90	4x250		
61450.181	F16	8.2	3	8x100	4x250						
61450.210	F19	8.2	3.5	8x100	4x100	4x100	4x100	4x250			
61450.221 .222	F21 F22	5.7 6	3.5 3.5	4x120 4x120	4x120 4x120	4x200 4x200					
61450.224 .226 .234	F24 F26 F38	5 5 5	3 3 3	4x150 4x150 2x150	– – 2x150	4x150 4x150 4x150	– – 4x150	4x200 4x200 4x200			

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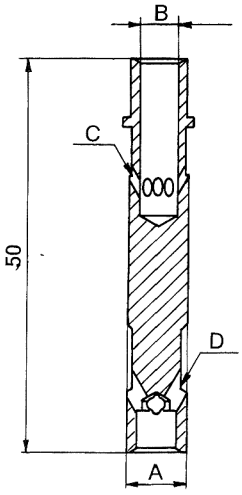
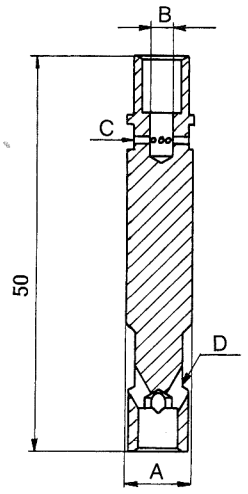
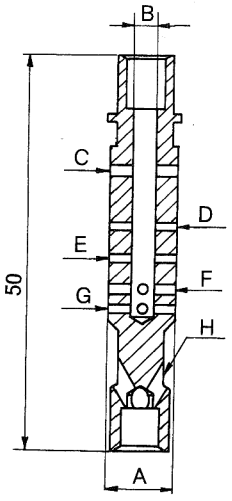


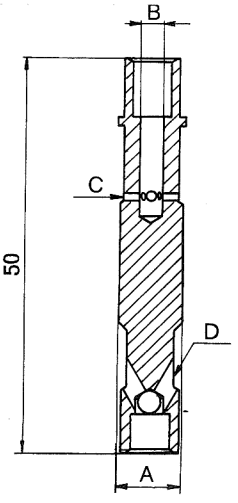
61450.131



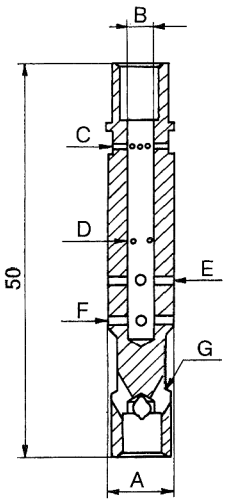
61450.166



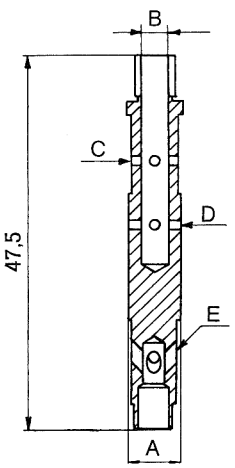
61450.167



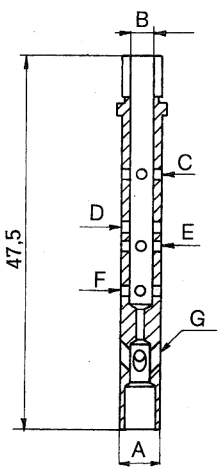
61450.181



61450.210



61450.221/222

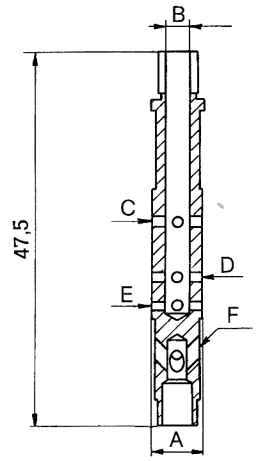


61450.224/226/234

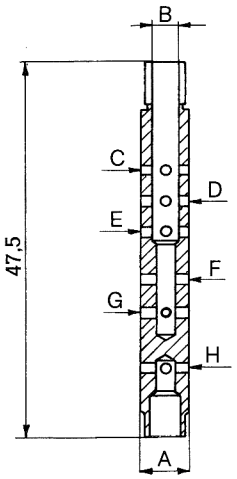
Emulsion tubes

Part number 61450...

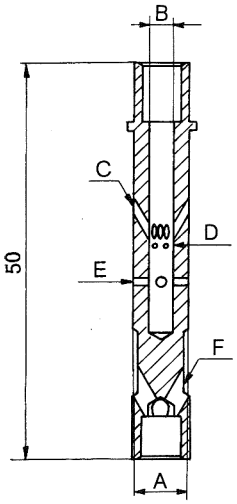
Part Number	Type	mm.		Nr. holes x diameter (1/100 of mm.)							
		A	B	C	D	E	F	G	H	I	L
61450.225	F25	6	3.5	4x120	4x120	–	4x200				
.228	F28	6	3.5	4x120	4x120	4x120	4x200				
61450.227	F27	6.2	3.5	4x115	4x115	4x115	2x115	–	4x150		
.229	F30	6.2	3.5	4x140	4x140	4x115	2x115	2x115	4x150		
.232	F36	5.9	3.5	–	2x140	2x115	2x115	–	4x150		
.238	F44	5.5	3.5	4x140	4x140	4x115	2x115	2x115	4x150		
.241	F46	3.5	3.5	–	2x140	2x115	2x115	–	4x150		
61450.230	F32	7	3	8x100	4x100	4x100	4x250				
61450.231	F33	5	3	2x100	2x100	4x120	4x150	4x200			
61450.235	F39	5	3	1x150	4x150	4x150	4x150	4x200			
61450.236	F42	6.2	3.5	4x200	4x200	4x160	4x140	4x150	4x150	4x180	
61450.237	F43	6.2	3.5	4x180	4x200	4x120	4x140	4x115	2x115	4x150	



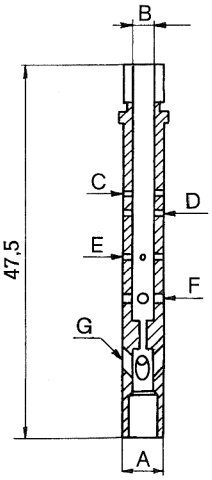
61450.225/228



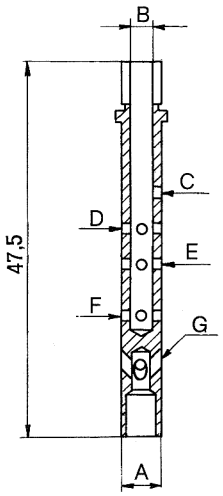
61450.227/229/232
238/241



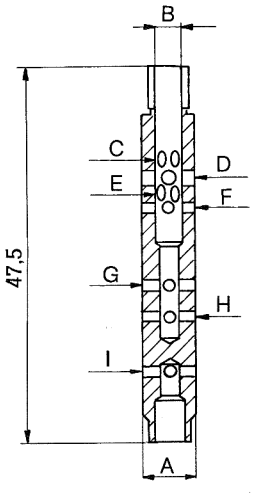
61450.230



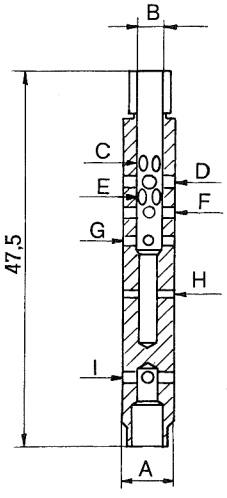
61450.231



61450.235



61450.236



61450.237

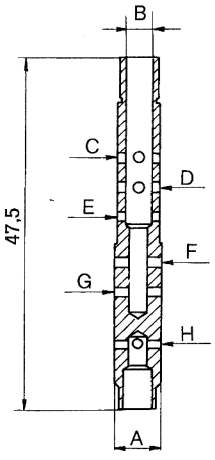
Emulsion tubes

Part number 61450...

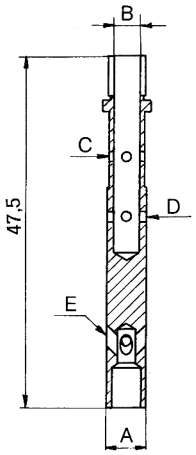
Part Number	Type	mm.		Nr. holes x diameter (1/100 of mm.)							
		A	B	C	D	E	F	G	H	I	L
61450.239	F30 spec.	6.2	3.5	4x140	4x140	2x115	2x115	2x115	4x150		
61450.240	F45	5.3	3.5	4x120	4x120	4x200					
61450.242	F46 spec.	6	3.5	2x140	2x115	2x115	4x150				

Part number 61455...

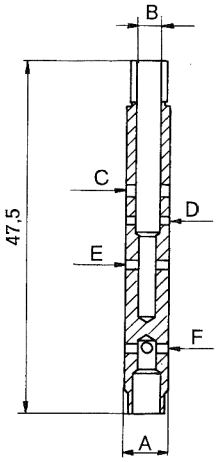
61455.001	F4	5.25	2.5	–	4x100	–	4x100	4x125			
.002	F5	6.25	2.5	–	4x100	4x125	4x100	4x125			
.003	F6	5.25	2.5	4x125	4x100	–	4x100	4x125			
.005	F8	5.25	2.5	4x125	4x100	4x125	4x100	4x125			
.006	F9	6.25	2.5	4x125	4x100	4x125	4x100	4x125			
.007	F10	4	2.5	–	4x95	4x125	4x95	4x125			
.008	F11	4	2.5	–	4x95	4x125	–	–			
61455.031	F7	5.5	3	4x100	4x100	4x100	4x100	4x100			
61455.046	F13	5.5	3.5	4x125	4x125	4x125	4x125				
61455.061	F14	6	3.5	4x100	4x100	4x100	2x100				
.062	F18	5.5	3.5	4x125	4x125	4x100	2x100				



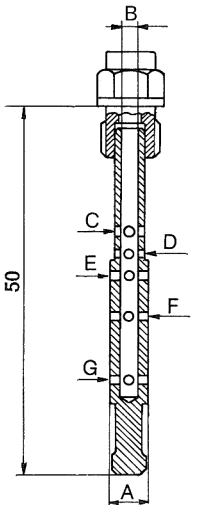
61450.239



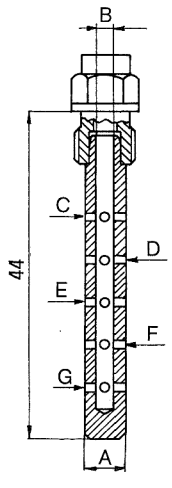
61450.240



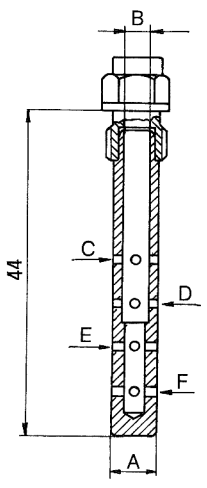
61450.242



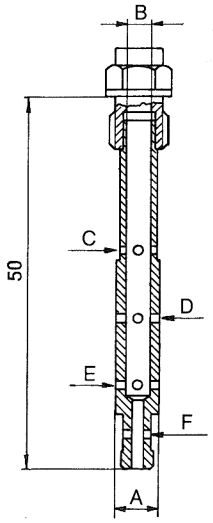
61455.001/002/003/005
006/007/008



61455.031



61455.046



61455.061/062

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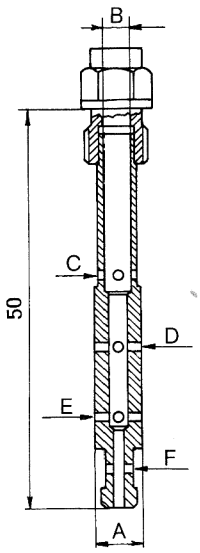
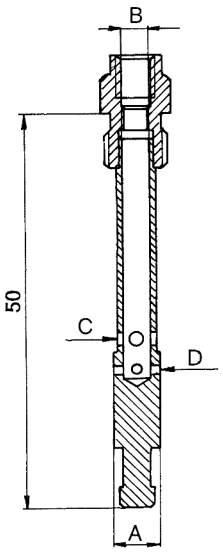
Emulsion tubes

Part number 61455...

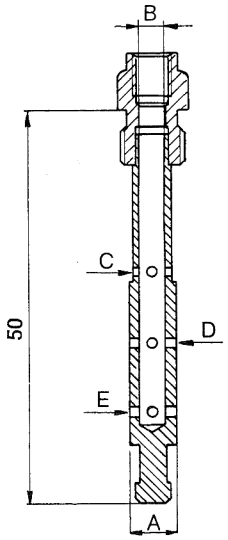
Part Number	Type	mm.		Nr. holes x diameter (1/100 of mm.)							
		A	B	C	D	E	F	G	H	I	L
61455.091	F17	6	3.5	4x140	4x100	4x100	2x100				
61455.106	F19	6	3.5	4x200	4x100						
61455.121	F20	6	3.5	4x100	4x100	4x100					
61455.136	F22	6	3.5	–	4x125	4x125	4x125	4x125	4x125		
.137	F25	6	3.5	4x100	4x115	–	–	–	–		
.138	F26	5.75	3.5	–	4x125	4x125	4x125	4x125	4x125		
.139	F33	5.75	3.5	–	4x125	4x125	4x125	–	–		
61455.151	F23	5.5	3.5	2x115	2x100	2x100	2x100				
.152	F30	5.5	3.5	4x115	4x100	4x100	4x100				
61455.181	F27	5.5	3.5	2x125	2x125	4x125	4x125				
61455.196	F28	6	3.5	4x150							



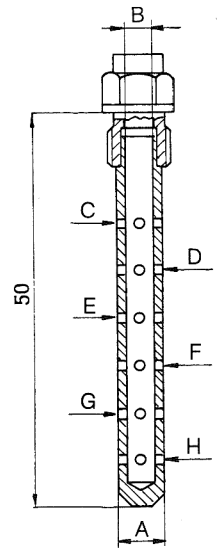
61455.091



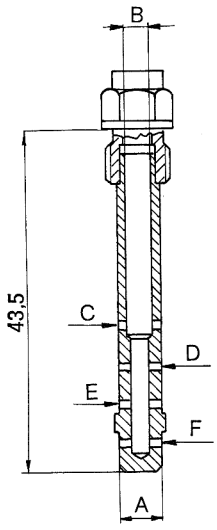
61455.106



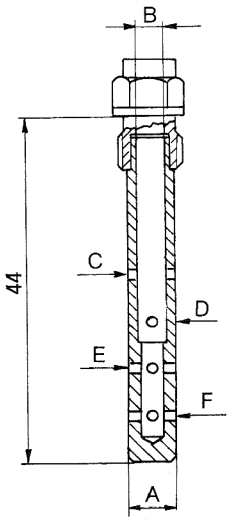
61455.121



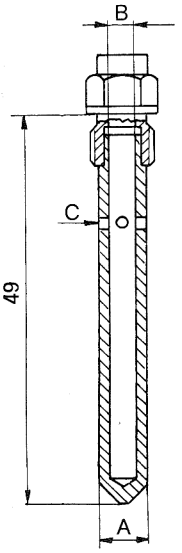
61455.136/137/
138/139



61455.151/152



61455.181

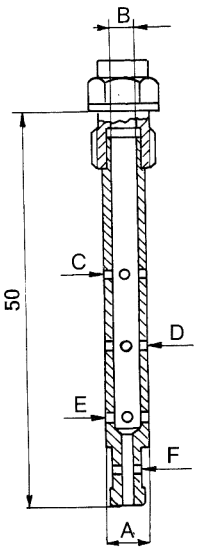


61455.196

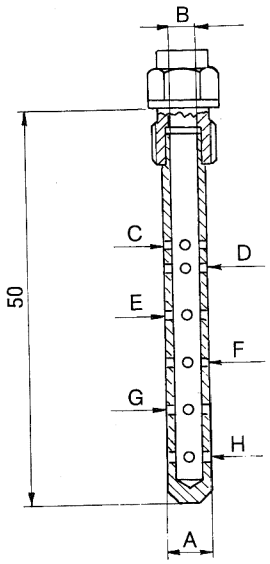
Emulsion tubes

Part number 61455...

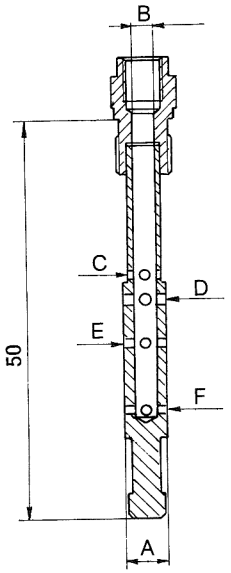
Part Number	Type	mm.		Nr. holes x diameter (1/100 of mm.)							
		A	B	C	D	E	F	G	H	I	L
61455.211	F29	5	3.5	4x100	4x100	4x100	2x100				
61455.231	F31	5.5	3.5	4x125	4x125	4x125	4x125	4x125	4x125		
61455.351 .352 .353	F1 F2 F3	4.5 4.75 4	2.5 2.5 2.5	4x100 4x100 4x100	4x140 – 4x140	4x100 4x100 4x100	4x100 4x100 4x100				
61455.366	F16	5.35	2.5	4x100	4x100	4x100	4x100				
61455.421	F1	4.5	2.5	4x100	4x140	4x140	4x100				



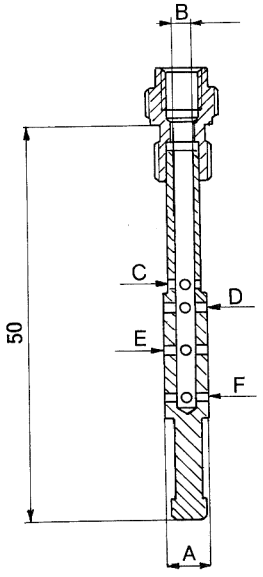
61455.211



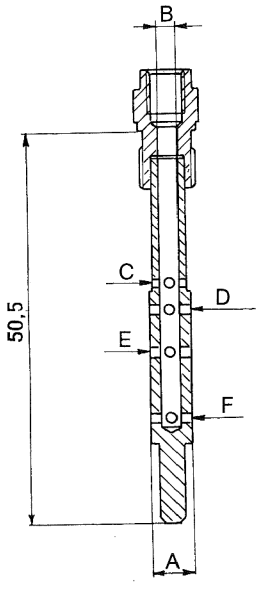
61455.231



61455.351/352/353



61455.366



61455.421

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Conversion table for 'E' tubes

'F' Designation	Part Number	'F' Designation	Part Number	'F' Designation	Part Number
F1	61440.150	F66	61440.220	F34	61450.054
F2	.166/471	F67	.357	F36	.232
F3	.120/181/452	F68	.328	F38	.234
F4	.196	F70	.197	F39	.235
F5	.182	F71	.343	F41	.057
F6	.211	F73	.303	F42	.236
F7	.226	F74	.304	F43	.237
F8	.212	F77	.454	F44	.238
F9	.241	F78	.222	F45	.240
F10	.261	F80	.223	F46	.241
F11	.281	F81	.224	**F46 (special)**	.242
F14	.301	F82	.329	F47	.058
F15	.321	F84	.305	F49	.167
F16	.341	F85	.344	F50	.036
F17	.351	F86	.359	F1	61455.351/421
F18	.356	F87	.229	F2	.352
F20	.365	F1	61450.026	F3	.353
F21	.371	F2	.027	F4	.001
F23	.372	F3	.028	F5	.002
F24	.213	F4	.051	F6	.003
F25	.488	F5	.029	F7	.031
F26	.151	F6	.071	F8	.005
F29	.501	F7	.091	F9	.006
F30	.515	F8	.092	F10	.007
F33	.502	F9	.030	F11	.008
F34	.525	F10	.111	F13	.046
F35	.526	F11	.031	F14	.061
F36	.352	F12	.131	F16	.366
F40	.242	F14	.166	F17	.091
F42	.243	F15	.032	F18	.062
F43	.302	F16	.181	F19	.106
F47	.244	F17	.052	F20	.121
F48	.245	F19	.210	F22	.136
F49	.153	F20	.054	F23	.151
F50	.216	F21	.221	F25	.137
F51	.246	F22	.222	F26	.138
F52	.323	F24	.224	F27	.181
F53	.217	F25	.225	F28	.196
F54	.247	F26	.226	F29	.211
F56	.218	F27	.227	F30	.152
F57	.219	F28	.228	F31	.231
F58	.154	F30	.229	F33	.139
F60	.325	**F30 (special)**	.239		
F61	.326	F32	.230		
F63	.155	F33	.231		

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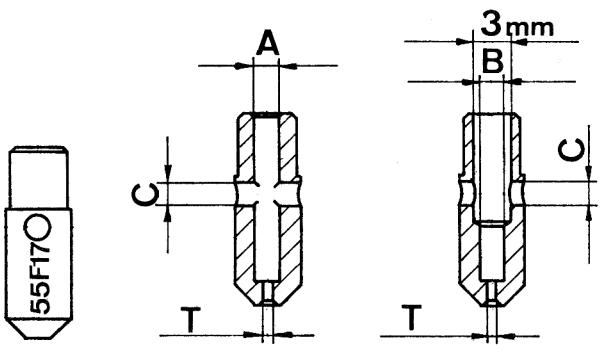
Carb Type	Basic Part Number	Sizes available (in mm.)
Auxiliary Venturis		
28/36 DCD 36 DCD	69001	3.00, 3.50, 4.50
30 DGF, DGS	71119	3.50, 4.00, 4.50
30/32 DMTE	70749	3.50, 5.00
32 ADF	70512	3.00, 3.50
32 DARA 32 DMSA 32/36 DHSA	71113	3.50, 4.00
32, 32/34 and 34 DAT, DATRA, DFT, DFTA, DFTH, DFTM, DMSA, DMTC, DMTL, DMTR, DMTRA, DMTT, DRTC, DRTM, DSTA	71115	4.00, 4.50
32 DFM, DIR 32/36 DFAV	71110	3.50
32 DRT	71127	3.50, 4.00, 4.50
32 DSTA, DRTC, DRTM	71138	4.00
32 IBF, IBP	71132	4.50
32 TL	70751	
32 TLA	31956016	
32 TLDR	70130	
32 & 34 TLC, TLF, TLM, TLP	70745	3.50, 4.00, 4,50
32/34 TLDA, TLDE, TLDM	70126	3.00
32/36 DGV or DGAV	71111	3.50
40 DCOE	69912 70001 70003 70005	3.50, 4.50 With air horns 3.50, 4.50 Without air horns 3.50, 4.50 With air horns 4.50 Extended type with air horns
40 DCOM	69909	6.00
40 DCN Excluding 40 DCN 21	71102	3.50, 4.00, 4.50
40 DCN 21	70504	4.50
40 DCNF	71107	3.50, 4.50
40mm 3 Barrel Carburettors	71103	3.50, 4.50
40 IDF 13,15, 70	69002	4.00, 4.50
40 IDF (late)	71102	3.00
42 DCNF, 44 DCNF	70503	3.50, 4.00, 4.50
42 DCOE	70002	3.50, 4.50 With air horns
44 IDF	71102	3.50, 4.00, 4.50
45 DCOE	69602 69904	3.50, 4.00, 4.50, 5.00 With air horns 4.50 Without air horns
46mm 3 Barrel Carburettors	71104	4.50, 5.00
48 DCOE	68819	4.50, 5.00 With air horns
48 DCO/SP	68820	5.00, 6.50, 7.00
48 IDA	69009	3.50, 4.00, 4.50, 5.00
48 IDF	71124	3.00, 3.50, 4.00, 4.50, 5.00
50 DCO/SP	68820	5.00, 6.50, 7.00
55 DCO/SP	68820	5.00, 6.50, 7.00
Chokes (Main Venturis)		
28/36 DCD (Primary Barrel)	71702	18, 19, 20, 21, 22, 23, 24, 25, 26
28/36 DCD (Secondary Barrel) 36 DCD	71701	19, 20, 21, 22, 23, 24, 25, 26, 27, 28
40 DCN, 40 DCNF	72129	24, 25, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36
40 DCOE	72303, 72302 (Air By-Pass)	24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
40 IDA 3 Barrel 40 IDT 3 Barrel 40 IDTP 3 Barrel	71502	30, 32, 34
40 IDL 3 Barrel 40 IDS 3 Barrel	71505	27, 32
40 IDF 13, 15, 19	71506	27, 28, 30, 32
42 DCNF	72106	32, 34, 36
42 DCOE	72304	24, 25, 26, 27, 29, 30, 31, 32, 33, 34

Carb Type	Basic Part Number	Sizes available (in mm.)
Chokes (Main Venturis)		
44 DCNF	72108	34, 36, 37, 38
44 IDF	71507	32, 34, 36
45 DCOE	72110, 72116 (Air By-Pass)	28, 30, 32, 33, 34, 35, 36, 37, 38, 39, 40
46 IDA 3 Barrel	71504	40, 42
48 DCOE	72117	40, 41, 42
48 & 50 DCO/SP	72136	42, 43, 46
48 IDA	72128	36, 37, 38, 39, 40, 41, 42, 43, 44, 45
48 IDF	71513	40, 41
55 DCO/SP	72135	46, 47, 48
Main Jets		
DCO, DCOE, DCNL, DCOM, DCO/SP, IDF and 48 IDA	73401	0.80, 0.85, 0.90, 0.95, 1.00, 1.05, 1.07, 1.10, 1.12, 1.15, 1.17, 1.20, 1.22, 1.25, 1.30, 1.32, 1.35, 1.40, 1.42, 1.45, 1.50, 1.55, 1.60, 1.65, 1.70, 1.75, 1.80, 1.85, 1.90, 1.95, 2.00, 2.05, 2.10, 2.15, 2.20, 2.25, 2.30, 2.35, 2.40, 2.45, 2.50, 2.60, 2.90
DAT, DATR, DATRA, DCA, DCNF, DCNFA, DCNVH, DCNV, DFT, DFTA, DFTH, DFTM, DMTC, DMTE, DMTL, DMTR, DMTRA, DMTT, DRT, DRTC, DRTM, DSTA	73405	0.90, 0.95, 0.97, 1.00, 1.02, 1.05, 1.07, 1.10, 1.12, 1.15, 1.17, 1.20, 1.25, 1.27, 1.30, 1.35, 1.40, 1.45, 1.50, 1.55, 1.60, 1.65, 1.70, 1.75, 1.80, 1.85, 1.90, 1.95, 2.00
ADC, ADF, ADFA, ADHA, ADL, ADLA, ADLD, ADS, ADSD, DAC, DAR, DARA, DATA, DCB, DCD, DCHE, DCOF, DCN, DCZ, DFA, DFAV, DFC, DFE, DFM, DFI, DFV, DGAR, DGAS, DGAV, DGF, DGMS, DGS, DGV, DHS, DHSA, DHTA, DIC, DICA, DIR, DM, DMA, DMS, DMSA, DPS, IBA, IBF, IBP, IBSA, IBSH, ICB, ICEV, ICF, ICH, ICP, ICR, IDAP, IDT, IMB, IMPE, TL, TLA, TLC, TLDA, TLDE, TLDM, TLDR, TLF, TLM, TLP and 3 Barrel Carburettors	73801	0.40, 0.45, 0.50, 0.60, 0.65, 0.70, 0.75, 0.80, 0.82, 0.85, 0.87, 0.90, 0.95, 0.97, 1.00, 1.02, 1.03, 1.05, 1.07, 1.10, 1.12, 1.15, 1.17, 1.20, 1.22, 1.25, 1.27, 1.30, 1.32, 1.35, 1.37, 1.40, 1.42, 1.45, 1.47, 1.50, 1.52, 1.55, 1.57, 1.60, 1.62, 1.65, 1.70, 1.75, 1.80, 1.85, 1.90, 1.95, 2.00, 2.05, 2.10, 2.15, 2.20, 2.30
Idle Jets		
28/36 DCB-DCD, DCHE, ICF, ICP, IMB, IMPE, 36 DCD, 40 DCN, DCZ	74401	0.40, 0.45, 0.47, 0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80, 0.90, 0.95, 1.00, 1.20, 1.25
ADC, ADF, ADFA, ADL, ADLA, ADLD, DAC, DAR, DARA, DAT, DATA, DATR, DATRA, DCOF, DFAV, DFC, DFE, DFM, DFT, DFTA, DFTH, DFTM, DFV, DGAR, DGAS, DGAV, DGF, DGMS, DGS, DGV, DHS, DHSA, DHTA, DIC, DICA, DMS, DMSA, DMTC, DMTE, DMTL, DMTR, DMTRA, DMTT, DPS, DRT, DRTC, DRTM, DSTA, IBA, ICB, ICEV, ICR, IDAP, IDT, TL , TLA, TLC, TLF, 3 Barrel Carburettors	74403	0.00, 0.40, 0.42, 0.45, 0.47, 0.50, 0.52, 0.55, 0.57, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.90, 0.95, 1.00
TLDR	74704	50
28/36 DM-DMA, DCA DCNF, DCNFA, DCNV, DCNVH, IDF	74405	0.40, 0.42, 0.45, 0.47, 0.50, 0.52, 0.55, 0.57, 0.60, 0.65, 0.70
ADF, ADS, DIR	74407	0.40, 0.45, 0.50, 0.55
ADF, ADSD, DIR, DMS	74408	0.45, 0.47, 0.50, 0.55
ADFA, ADL, ADLA, ADHA, DARA, DGF, DGAR, DGS, DIR, DPS, IBF, IBSA, IBSH, IBP, ICH	74409	0.40, 0.42, 0.45, 0.47, 0.50, 0.52, 0.55, 0.57, 0.60
48 IDA (idle jet)	74823	0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80
48 IDA (idle jet holder)	77903	0.60, 1.00, 1.10, 1.20, 1.25, 1.50

Idle Jets for DCOE series carburettors



Idle speed air jet dia. in mm.		F code
0.70		F6
0.90		F12
1.00		F9
1.20	more common	F8-F11-F14
1.30	more common	F13
1.40	more common	F2-F4
1.60	more common	F5
1.70	more common	F7
2.00		F1
2.30		F3

Basic Part Number	Type	A	B	C		T
		Ø (mm.)	Ø (mm.)	Nr. holes	Ø (mm.)	Sizes available (in mm.)
74814. ...	F1	1.40		2	1.40	0.00, 0.30, 0.35, 0.40, 0.45, 0.50, 0.52, 0.55,
74815. ...	F2	1.50		1	1.40	0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.90, 0.95,
74816. ...	F3	1.40		2	1.60	1.00, 1.10, 1.20, 1.30, 1.35, 1.40, 1.50, 1.60,
74817. ...	F4	2.00		1	1.40	1.70
74818. ...	F5	1.40		1	1.60	
74819. ...	F6	2.00		1	0.70	
74820. ...	F7	2.00		2	1.20	
74821. ...	F8	2.00		1	1.20	
74822. ...	F9	2.00		1	1.00	
74824. ...	F11	1.50		1	1.20	
74825. ...	F12	1.50		1	0.90	
74826. ...	F13	2.00		2	0.90	
74827. ...	F14	1.70		1	1.20	
74828. ...	F15	2.00		2	1.05	
74829. ...	F16	2.10		2	1.30	
74830. ...	F17		2.10	2	1.35	0.00, 0.45, 0.47, 0.50, 0.55, 0.57, 0.59
74831. ...	F18		2.10	2	1.60	
74832. ...	F19		2.00	1	1.20	
74833. ...	F21		2.10	4	1.10	
74834. ...	F22		2.10	4	1.20	
74835. ...	F23		2.00	1	1.25	
74836. ...	F24		2.00	1	1.55	
74837. ...	F25		2.00	1	1.50	
74838. ...	F26		2.00	2	1.25	
74839. ...	F27		2.00	1	1.60	

6) Idle jet - Figs 37 and 38

Two widely used arrangements are illustrated in **Figs. 37** and **38**: the first shows a DCOE series carburettor with idle jet of the type incorporating the idle air jet: in the second, this air jet is separate. The idle jet belonging to the adjustment setting being considered here, has a diameter of **0.50 mm** and designation **50 F11**. Following is a tabulation showing – next to every **F designation** – the respective and equivalent air jet diameter.

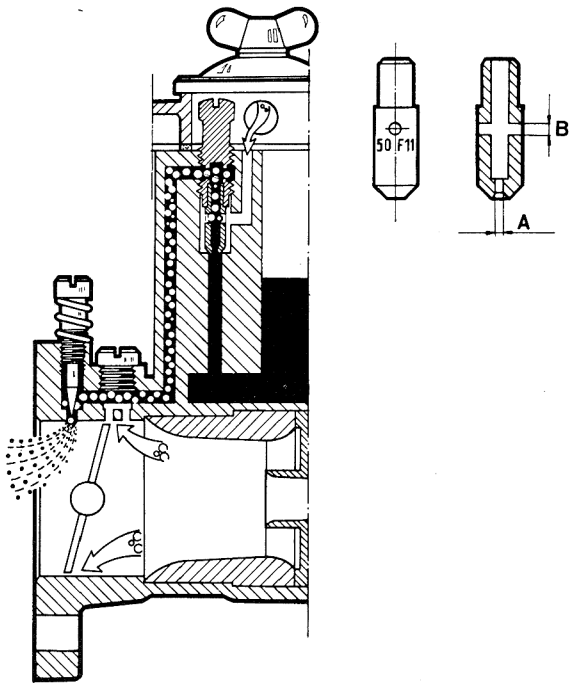


FIG. 37
Idle jet - Shown here is the idle speed circuit and fuel jet for the DCOE series carburettors, with air jet (dimensions B) incorporated in fuel jet (dimension A).
This is an example of idle speed system fed from float chamber.

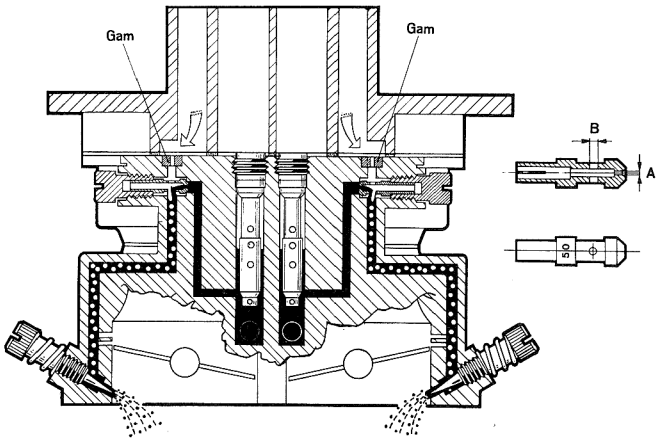


FIG. 38
Idle jet - As shown here, this jet is separate from the idle air jet Gam; dimension B is not a calibrated value. This is an example of idle speed system fed from emulsion tube well.

Carb Type	Basic Part Number	Sizes available (in mm.)
Acceleration Pump Jets		
40 IDA 3 Barrel 40 IDL 3 Barrel 46 IDA 3 Barrel	76201	0.40, 0.45, 0.50, 0.60
40 IDT 3 Barrel 40 IDTP 3 Barrel 40 IF3C 3 Barrel	76202	0.40, 0.50
28/36 DCD, 36 DCD	76203	0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70, 0.80 Pump operates on primary Barrel only
IDF Series	76210	0.35, 0.40, 0.50, 0.55
32/36 DFAV, 32 DFM, DIR, DFE, DFD, DHSA, DMSA, ADSD, ADSA	76211	0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70
40 DFAV, DFI, DGAS	76212	0.40, 0.45, 0.50, 0.55, 0.60, 0.70
40 DCN or DCNF Series	76215	0.35, 0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70
32/36 DGAV & DGV	76226	0.50 (for alternative sizes use 76212 with secondary barrel pump orifice blocked)
DSTA	76224	0.60
32 DIR, DAR, DARA	76227	0.50, 0.60
48 IDA	76402	0.35, 0.50, 0.60, 0.70
ADF, ADFA, DAT, DATR, DATRA, DFT, DFTA, DFTM, DGF, DGS, 32/34 DMTC, DMTE, DMTL, DMTR, DMTRA, DMTT, DRT, ICH	76407	0.40, 0.45, 0.50, 0.55
DMTC	76410	0.40, 0.45, 0.50, 0.55, 0.60
IBF, IBP	76413	0.45, 0.50, 0.55, 0.60
DFT	76417	0.45, 0.50
DRTC	76420	0.50, 0.55
DRTM	76422	0.40, 0.50, 0.55
28/32 TLDM, TLM	76426	0.40, 0.45
TLA	76432	0.35
TL	76435	0.35
TLDR	76439	0.40, 0.50, 0.55
DFTH	76443	0.45, 0.50
TLC, TLP	76444	0.40, 0.50
TLDE	76451	0.40
26/28 TLDM	76453	0.40
TLDA	76454	0.45
TLF	76458	0.35
DCO, DCOE, DCO/SP	76801	0.30, 0.35 0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.90
DCOM	76818	0.35, 0.40, 0.45
Pump Bleed	79701	0.00, 0.35, 0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.90, 1.00, 1.50
Air Correction Jets		
ADC, ADF, ADFA, ADHA, ADL, ADS, ADSD, DAC, DAR, DARA, DCN, DCOF, DFAV, DFC, DFE, DFD, DFI, DFM, DGAV, DGF, DGS, DGV, DHSA, DIC, DICA, DIR, DMSA, IBA, IBP, ICF, IBSA, IMB, OC, TLDA, TLDE, TLDM and 3 Barrel Carburettors	77201	1.00, 1.10, 1.15, 1.20, 1.25, 1.30, 1.35, 1.40, 1.45, 1.50, 1.55, 1.60, 1.65, 1.70, 1.75, 1.80, 1.85, 1.90, 1.95, 2.00, 2.05, 2.10, 2.15, 2.20, 2.25, 2.30, 2.35, 2.40, 2.45, 2.50, 2.55, 2.60, 2.65, 2.70, 2.80
DCNL, DCO, DCOE, DCOM, DCO/SP, IDA, IDF	77401	0.80, 0.85, 0.90, 0.95, 1.00, 1.05, 1.10, 1.15, 1.20, 1.25, 1.30, 1.35, 1.40, 1.45, 1.50, 1.55, 1.60, 1.65, 1.70, 1.75, 1.80, 1.85, 1.90, 1.95, 2.00, 2.05, 2.10, 2.15, 2.20, 2.25, 2.30, 2.35, 2.40, 2.50
DCNF, DMTRA, DATRA, DFTA, DMTR	77501	1.00, 1.20, 1.30, 1.35, 1.40, 1.45, 1.50, 1.55, 1.60, 1.65, 1.70, 1.75, 1.80, 1.85, 1.90, 1.95, 2.00, 2.05, 2.10, 2.15, 2.20, 2.30, 2.40, 2.50
28/36-36 DCD, DCZ - 28/36 DCB, DCHE	77502	1.00, 1.05, 1.15, 1.20, 1.25, 1.30, 1.40, 1.45, 1.50, 1.55, 1.60, 1.65, 1.70, 1.75, 1.80, 1.85, 1.90, 1.95, 2.00, 2.05, 2.10, 2.15, 2.20, 2.25, 2.30, 2.35, 2.40, 2.45, 2.50, 2.55, 2.60, 2.65, 2.70, 2.75, 2.80, 2.85, 2.90, 2.95, 3.00

Carb Type	Basic Part Number	Sizes available (in mm.)
Needle Valves		
DCOE (Solid Type)	79401	1.50, 1.75, 2.00, 2.25, 2.50, 3.00
DCO	79502	1.75
DCN, DCOE, DCOM, DCO/SP (Spring Loaded)	79503	1.50, 1.75, 2.00, 2.25, 2.50, 3.00
46 and 48 IDA 2 Barrel	79504	1.75, 2.00, 2.50, 3.00
DHSA, DCD, DIC, DICA, ICA, ICF, DARA, DATRA, DMTL, DMTR, DMTRA, DFD, DFM, DMSA, DATR, DCOF, DHTA, DFC, DATC, DMTC, DCOE, DGF, DGS, IBA, IBSA, IBSH, IBP, ICB, ICR, ICEV, ICE, ICF, ICH, ICP, ICT, OF	79507	1.50, 1.75, 2.00, 2.25
40 & 46 mm 3 Barrel Carburettors	79508	1.75, 2.00
ADFA, DIR, DFM	79510	1.50, 1.75, 2.00, 2.50
IDF	79511	1.50, 1.75, 2.00, 2.50
DFI	79512	1.75
DCN & DCNF	79514	1.50, 1.75, 2.00
32/36, 40 DFAV	79515	2.00, 2.50
32/36 DFAV 28/30, 32/36 DGV 32, 32/36 DGAV 32/36 DAC	79531	1.75, 2.00, 2.50

In the case of adjustment settings in which the idle fuel jet is separate from the idle air jet, only the value in mm of the latter jet is specified. The idle fuel jet diameter is usually included between **0.40** and **0.70 mm**: this jet strongly affects the idle speed mixture metering and the entire transition (or progression) stage. The idle air jet, instead, comes into play on the higher side of the transition period. By transition stage is intended the carburettor operation range that starts from the idle speed rate and ends slightly beyond the point of main circuit priming.

Idle speed circuit feed - Generally, in applications where a single carburettor barrel feeds two or more engine cylinders, the idle speed circuit receives its fuel supply from the main well, in a location between the main fuel jet and the lower end of the emulsion tube **(Fig. 38)**. In sports engine applications where each carburettor barrel feeds a single cylinder, the part-load operation mixture tends to be weak; thus, the idle speed circuit receives its fuel supply directly from the constant-level float chamber **(Fig. 37)**, in the majority of cases. In some applications, designers prefer a compound system in which the idle jet is fed simultaneously from both the float chamber and the well.

Engine idle speed rate adjustments

This brief description must be completed by the more detailed instructions outlined on page 55 under **Part Three**.

The engine must be connected to a revolution counter and be running at rated operation temperature. Engine idle speed rpm is set by a **speed rate adjusting screw** to the value specified by the Manufacturer: between **600-800 rpm** for touring car engines and about **1000 rpm or more** for sports car engines.

First, turn in or out slowly the idle **mixture adjusting screw** to find the position in which it gives the highest possible rpm rate. If the speed must be reduced to the previous mentioned rates, operate on the **speed adjusting screw**, then check again for proper metering by the **mixture adjusting screw**. Idle speed mixture is correct when the engine runs smoothly and upon turning in or out the mixture screw – that is, weakening or enriching the mixture strength – the rpm rate drops and becomes erratic.

Transition (or progression) stage check - Once the idle speed rate is properly set, increase engine rpm rate by the speed adjusting screw up to the point at which the mixture is about to issue from the auxiliary Venturi spray tube (say, 300 rpm above idle rate): now, check for correct metering by turning slowly in or out the mixture adjusting screw. If by **screwing in** the speed increases it means that progression is **rich** while it is **weak** if the mixture screw must be **backed out** (open) to obtain a speed increase: progression will instead be correct if by turning the mixture adjusting screw **either way** the rpm rate will drop. From the results of this check, the transition stage may be enriched by increasing the idle fuel jet diameter or by reducing the idle air jet diameter. It is of course possible to weaken the transition stage by proceeding in the opposite way.

Sometimes it may prove necessary to re-locate the transition orifice with respect to the throttle valve edge, for instance, when a carburettor servicing includes polishing of the barrel and throttle valve replacement. Such condition is illustrated in **Figs. 39** and **40**. In **Fig. 39-A** the transition orifice is blanked out by the throttle plate edge set in idle speed position as it should be for correct operation.

In **Fig. 39-B** the transition orifice results offset upwards (upstream of throttle) and though idle speed operation is quite smooth **"flat spots"** will be experienced as soon as the throttle begins to open, owing to an excessively weak mixture. In fact, in this case the orifice is acted upon too late by the depression existing beneath the throttle plate.

In **Fig. 39-C** the transition orifice is offset downwards (downstream of throttle) and idle speed operation is quite "rough" owing to an excessively rich mixture even with mixture adjusting screw tightened in fully (closed), as the supply from the transition orifice is too generous. The remedial actions for such conditions are:

– case of **Fig. 39-B** - by trial and error cut a chamfer in throttle plate edge as shown in **Fig. 40-A**.

– case of **Fig. 39-C** - drill a hole in throttle plate, on the side opposite the transition orifice, so that part of the air drawn in by the engine will flow through, thus allowing the throttle valve to remain closed, as shown in **Fig. 40-B**. Initially, this hole should have a diameter of 0.7 mm and may be increased gradually up to **1.2 - 1.5 mm**, as required, but **never** to a diameter that would cause the

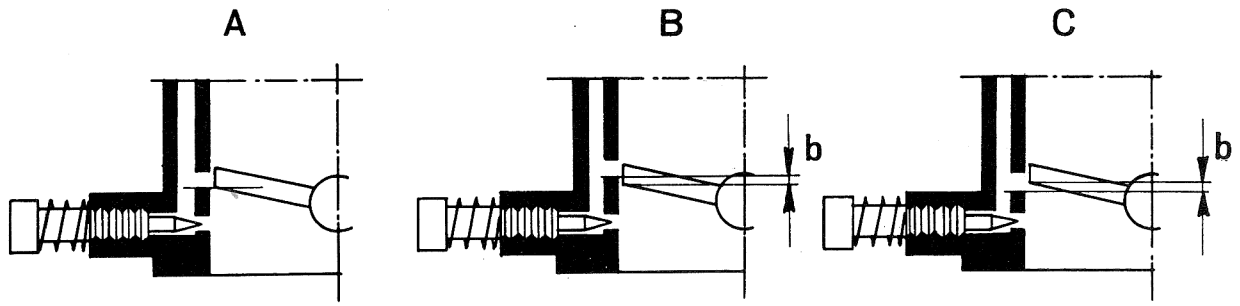


FIG. 39
Transition orifice location with respect to the edge of the throttle set for idle speed operation.
A correction location - B location offset upstream resulting in a positive head b - C location offset downstream resulting in a negative head b.

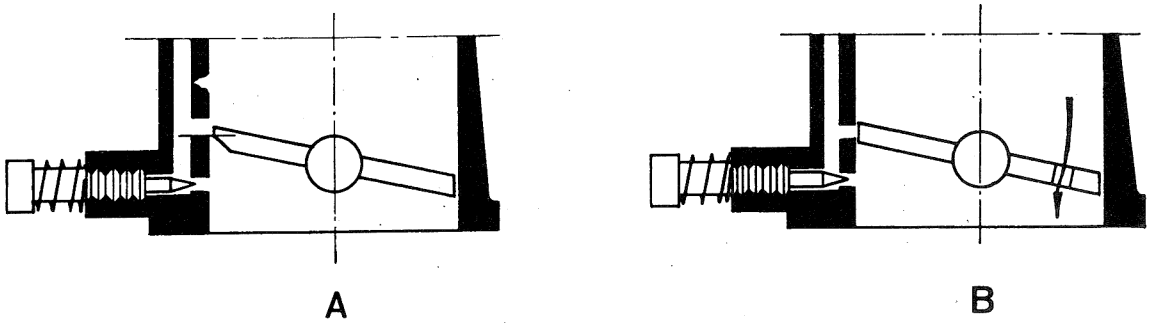


FIG. 40
To advance transition orifice action, a slight chamfer is cut in throttle plate (see A) whereas to retard this action a small hole is drilled through the throttle plate (see B).

throttle plate to blank out the barrel completely.
The above procedures serve to remedy slight faults and it is not possible to describe here other corrective measures such as variations in transition orifice location or diameter.

Weber throttle valve plates are stamp-marked with a value representing the lowest angle in degrees existing between closed throttle and barrel centreline – usually **78°** or **85°** – to prevent any replacement errors.

7-8-9) Accelerating pump jet and drain
Figs. 41 and 42

The main features of accelerating pump operation are the amount of fuel injected at each stroke and the promptness and duration of each injection. When tuning up for proper adjustment settings, the pump jet and drain diameters are determined by trying to minimise, as far as practicable, the amount of fuel injected. Often, also the direction of the fuel spray proves to be a significant factor. Generally, when engine operates at high rpm rates the pump jet (diameter between 0.35 and 1 mm) is subject to a vacuum sufficient to produce an uninterrupted flow of fuel, that is, it performs as a **high speed jet** and its role falls under the adjustment setting data.

If the pump supply ceases "faltering" accelerations will result with "poppings" in carburettor, followed by possible stopping of the engine. Instead, if the pump supply is excessive, acceleration will still falter and an emission of black smoke at the exhaust will mark each acceleration.

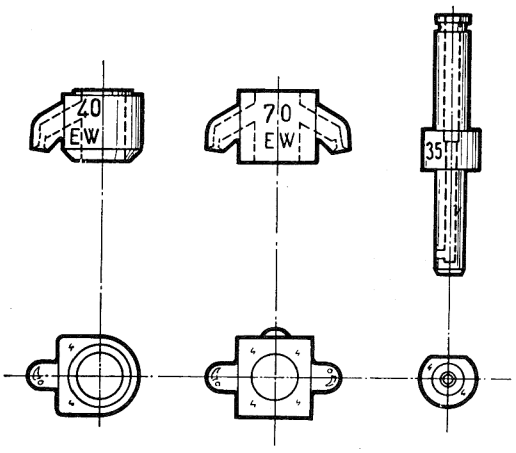


FIG. 41
Accelerating pump jet - Right: the DCOE series carburettor jet.

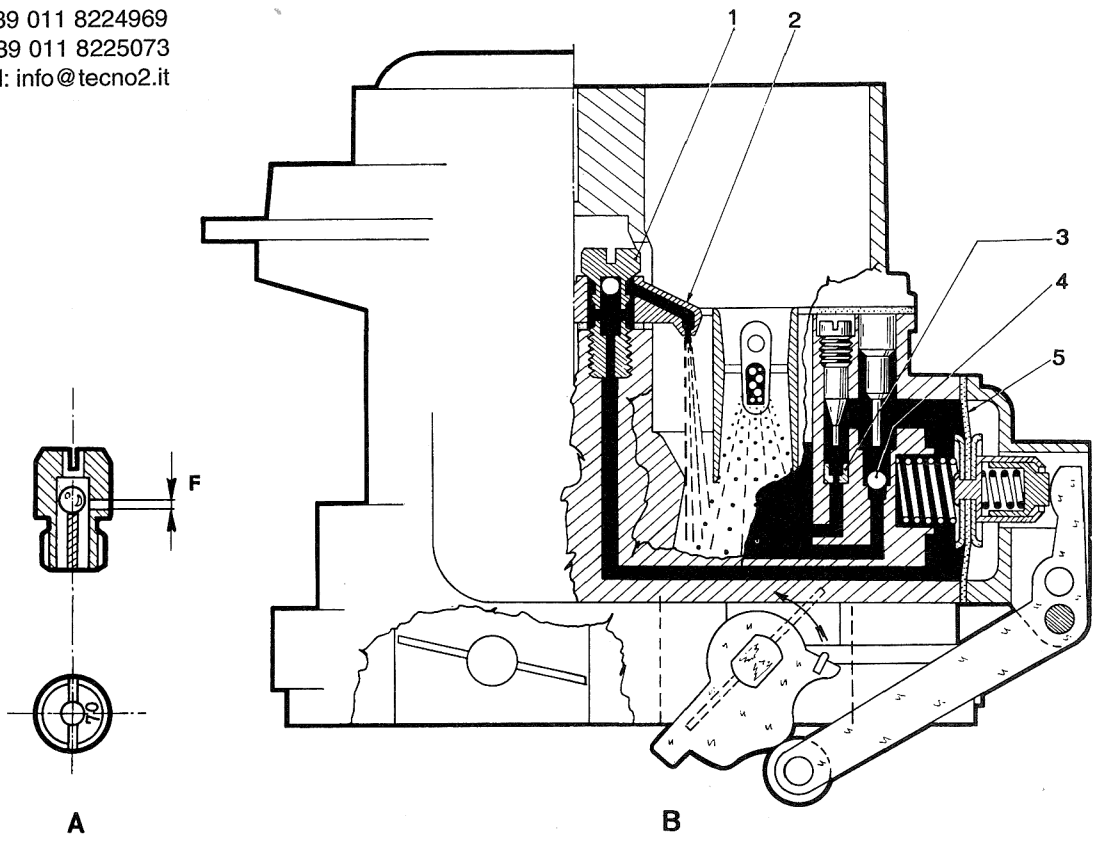


FIG. 42 - A and B
In A the pump jet is incorporated in the intake valve assembly and the diameter of drain F is marked on the part. In B the pump jet is of the separate type - 1 Pump delivery valve - 2 Pump jet - 3 Pump drain - 4 Pump intake valve - 5 Pump diaphragm.

The pump drain jet **(Fig. 42)** which may also be of the type incorporated in intake valve assembly, is selected in one of the following two settings:
– **Closed**, for maximum amount of injected fuel and maximum promptness.
– **Open**, with **0.35** to **1.5 mm** bore, to reduce the amount of fuel and to slightly retard promptness.
Using some special provisions it is possible to measure the amount of fuel injected by the pump at every throttle opening: for the adjustment setting considered here, the value in **cc** referred to a single barrel is tabulated on **page 20**.

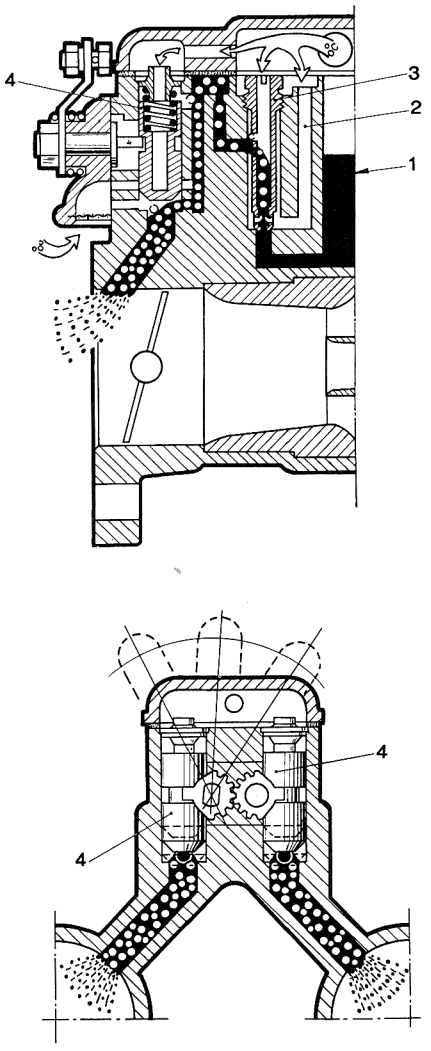


FIG. 43-A
Shows the DCOE series carburettor choke system and jet.
1 Constant-level float chamber or bowl - 2 Starting fuel reserve well - 3 Choke jet of the type with incorporated emulsion tube and air jet - 4 Plunger valve.

10) Choke jet - Fig. 43-A

The DCOE series carburettor is provided with an easy starting device (choke) of the progressive-action type consisting of two separate circuits (one to each barrel) in which two manually operated plungers govern the mixture rating.
The choke jet which often incorporates the emulsion jet and the air jet – may have a diameter included between **0.60** and **2 mm**, thus permitting a wide range of possible adjustments to cope with different engines and starting temperatures. An increase in choke fuel jet bore enrichens the mixture over the entire operation range whereas any variation of the choke air jet is more influential once engine is started and during its warm-up period: the setting of the choke system involves several provisions such as the fuel reserve well, the arrangement of blanking element and its intervening action adjustment, a special valve for leaning out the mixture once engine is started, etc., all of which may vary from one carburettor to another.
Offset shutter valve choke - Fig. 43-B - shows a manually-controlled starting circuit of the offset shutter (or strangler) valve type. The more significant factors for adjustment settings, and referred to the choke-IN condition, are:
– **Opening** of the main throttle, known as the **fast-idle** setting: increases the idle speed rate of the engine once it has started and runs through the warm-up stage.
– Calibrated starting spring: it is essential to establish the mixture metering needed through the choke-IN stage.
– Stopping of the shutter valve opening to ensure appropriate meterings during warm-up at large main throttle openings.
Make sure the shutter (or strangler) valve moves freely without any binding caused by distortions, wear or dirt: for a correct adjustment of the manual control – a very important operation to prevent starting or idle speed rate difficulties – **refer to the instructions given on page 54 under Part Three**.

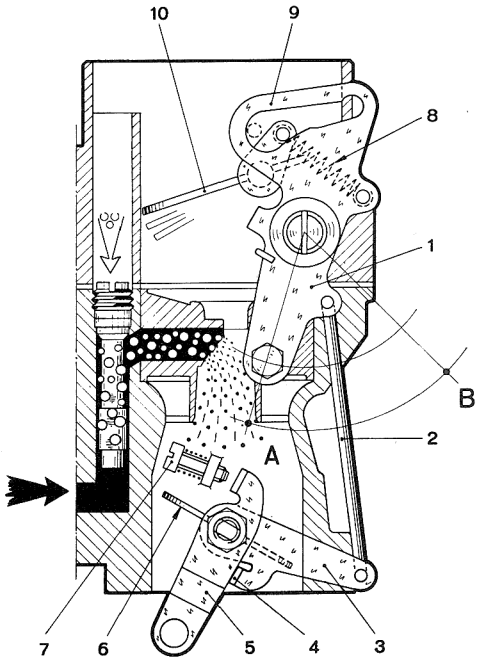


FIG. 43-B
Shows an offset shutter (or strangler) valve choke system - Position A - Device IN; position B - Device OUT.
1 Control lever - 2 Rod controlling the opening of throttle 6 at fast idle, through idle lever 3, lug 4 and lever 5 - 7 Idle speed adjusting screw - 8 Calibrated starting spring - 9 Stop limiting the opening of shutter valve 10.

11-12) Needle valve

Through the needle valve the float regulates the admission of fuel into the bowl to keep the level constant independently of the variable engine requirements. Level maintenance is improved by adopting needle valves having the smallest diameter that still provides the fuel supply necessary for engine operation at its highest power rating.

One of the more commonly adopted diameters is **1.50 mm** which is capable of supplying **25-30 litres per hour** of fuel if pressure ranges between **0.15** and **0.20 kg/sq.cm (2.1-2.8 psi)**: larger sizes are used for higher fuel consumption rates and fuels containing alcohols.

The needle taper point and seat are finished and checked as a pair and are not interchangeable with the respective parts of other valves. The needle valve is often damaged by engine vibrations and car motions if the float chamber is empty (LPG feed systems); in the case of sports cars transported on trucks, carburettor bowls should be filled with thin engine oil for proper protection.

13) Fuel level in float chamber or bowl - Figs. 44-45

The fuel height in bowl must be kept at a **lower level** with respect to the spray nozzle bore: this prevents fuel

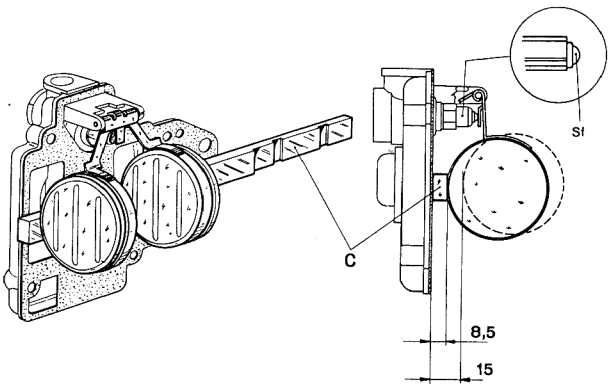


FIG. 44
Fuel level geometrical checks - 40 DCOE 2 type carburettor - C Weber gauge - Sf Valve damper ball.

emissions when engine is inoperative and car inclined. The level may be set at a height of **less** than **5-6 mm** below nozzle bottom edge, depending on the type of carburettor and the performance required of the vehicle. Fuel level variations have greater influence during accelerations, idle speed and part-load/low rpm operation, with particularly marked effects in sports car applications. The Catalogue Data Sheet of each carburettor provides the necessary instructions for a correct level check which is performed as follows:

a) by a special gauge rod **C - Fig. 44** - taking care not to push in the ball of the spring-dampened valve. Usually, the cover gasket is removed if **to do this it is unnecessary** to take out the float;
otherwise, check with gasket tight on cover held vertical.

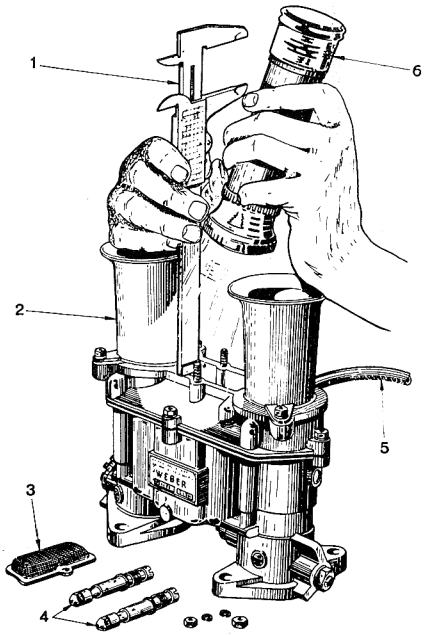


FIG. 45
Fuel level hydraulic checks - 48 IDA type carburettor - 1 Vernier calliper - 2 Flared air horn extension (or additional air intake) 3 Strainer - 4 Main calibrated parts - 5 Fuel arrival line - 6 Flashlight.

b) Inside the well, after having removed the air jet and emulsion tube, by a Vernier caliper **1** and flash-light **6**, as shown in **Fig. 45**.

When the end of the gauge rod comes into contact with the fuel in the well it causes a sudden change in the reflected light thus giving a clear indication of the level measurement. This check is possible on almost all sports car carburettors which are often fed by an electric pump which turns out to be extremely useful on this occasion. Check the float maximum lowering position: the needle must travel a distance equivalent to slightly more than the diameter value (in mm) stamped on its seat. If any correction is needed, bend delicately the two tongue plates located in proximity of the fulcrum pin.

14) Float-weight

In the case of the adjustment setting being considered here, the weight is **26 grams** because the float is double: the weight in grams is stamped on the tongue plate or float itself and **is an adjustment setting** specification for it is one of the factors establishing the fuel level in bowl. The metal float is delicate as it is made of **0.16-0.20 mm** thick sheet: for this reason, **absolutely avoid** blowing compressed air into the float chamber or fuel inlet port when float is installed in its place. The free and unimpeded movement of the float in chamber is a design requirement.

15) Flared air horn extensions - Fig. 45

They are necessary in sports car applications where quite frequently no air cleaner is provided. Their purpose is to:

– **Improve** cylinder charging
– **Limit** dispersions due to mixture "rejections"
– **Carry** the flame trap.

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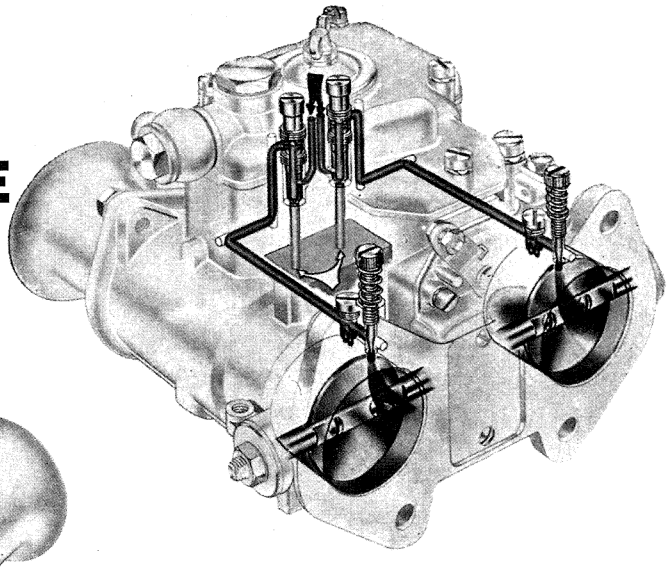
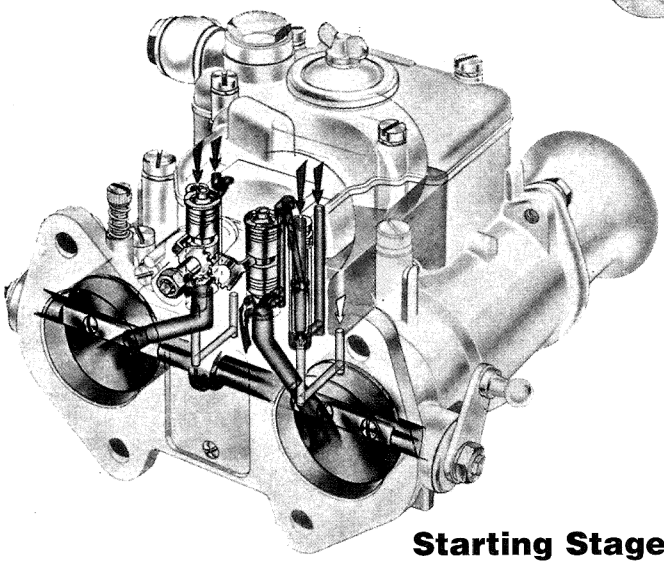
Carburettor

WEBER

Series 38-48 DCOE

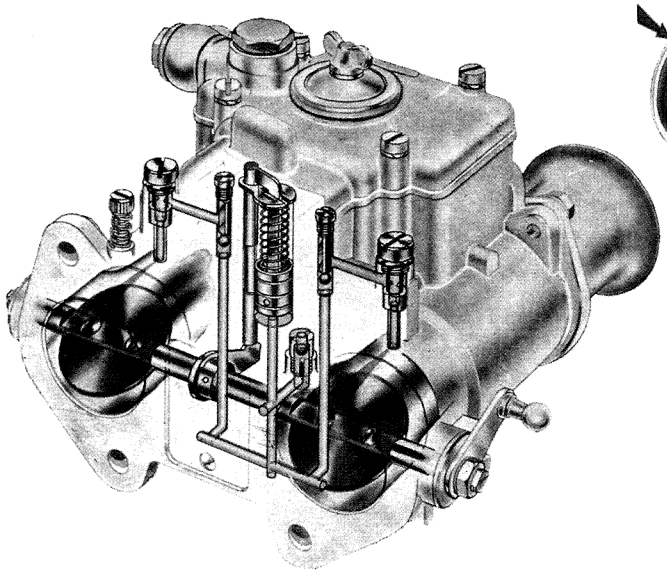


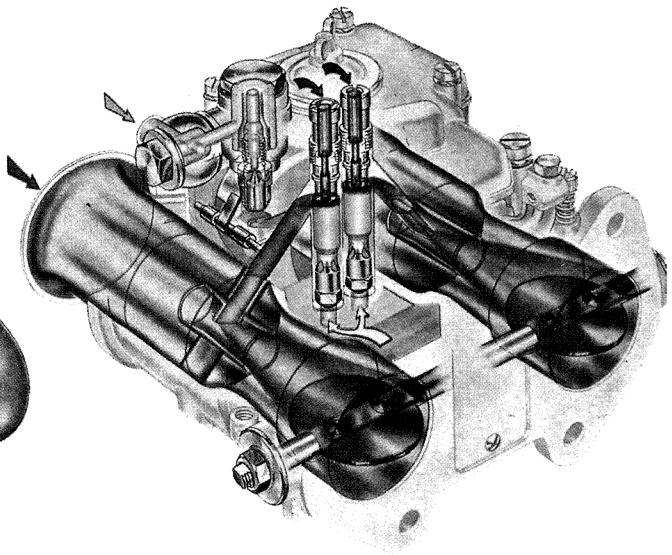
Idle Speed Operation



Starting Stage Operation

Full Power Operation





Acceleration Stage Operation