SOLEX

CARBURETTOR

TYPE M

FITTING

AND

INSTRUCTION BOOKLET

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SOLEX Carburettors Types MV & MH

FITTING

AND INSTRUCTION BOOKLET

N° 7

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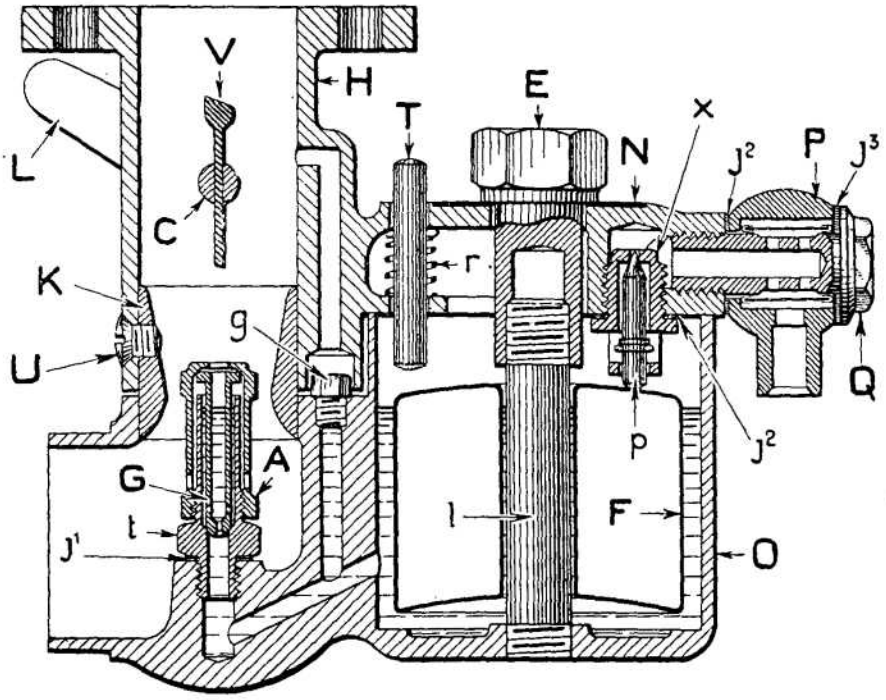


Fig. 1

SECTIONAL DIAGRAM OF VERTICAL CARBURETTOR

Type MV

G, Main jet. - **g**, Auxiliary jet. - **t**, Main jet carrier. - **F**, Float.
A, Main jet cap. - **K**, Choke tube. - **P**, Swivelling filter union.
U, Choke tube fixing screw. — **j¹**, Main jet carrier washer.
j², Needle valve and petrol union washer. - **L**, Throttle lever.
j³, Large swivelling union washer. - **p**, Needle. - **V**, Throttle.
Q, Filter union assembling nut. - **H**, Body of the Carburettor.
O, Float chamber of the Carburettor. - **X**, Needle valve seating.
C, Throttle spindle. — **E**, Dismounting nut. — **T**, Tickler.
r, Tickler spring. — **l**, Central pillar. — **N**, Nameplate.

INSTRUCTIONS

FOR FITTING & ADJUSTING

THE

SOLEX

CARBURETTOR

Types MV & MH

I

MOUNTING

The " M " type SOLEX is made in two models — The vertical model MV and the horizontal model MH.

The choice of the carburettor depends upon the type which is most readily adaptable and upon the most suitable offtake diameter.

The MV type can be adapted to all types of motors but the MH type is only suitable in the case of monobloc engines having a single induction port and the petrol tank mounted sufficiently high to give a correct head of petrol regardless of the inclination of the engine due to the ascension of steep hills.

The advantage of the latter type lies in the absence of induction pipes and external heating appliances.

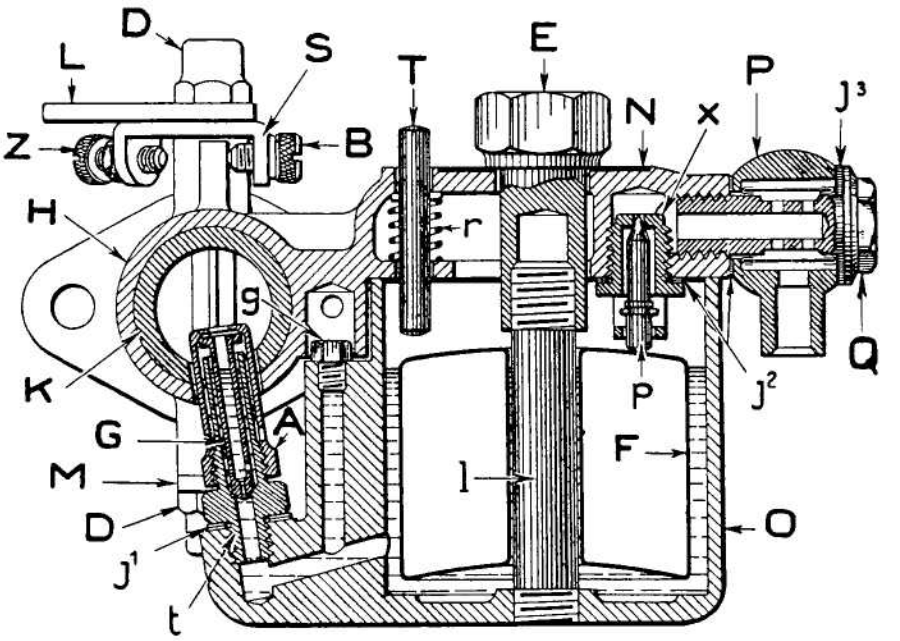


Fig. 2

SECTIONAL DIAGRAM OF HORIZONTAL CARBURETTOR

Type MH

G, Main jet. - **g**, Auxiliary jet. - **t**, Main jet carrier. - **F**, Float.
A, Main jet cap. - **K**, Choke tube. - **P**, Swivelling filter union.
Z, Slow running adjustment screw. - **j¹**, Main jet carrier washer.
j², Needle valve and petrol union washer. — **p**, Needle.
j³, Large swivelling union washer. - **X**, Needle valve seating.
H, Body of the Carburettor. - **B**, Throttle opening limit screw.
O, Float chamber ot the Carburettor. — **L**, Throttle lever.
Q, Filter union assembling nut. - **D**, Throttle spindle end nut.
M, Throttle spindle distance washer. — **E**, Dismounting nut.
S, Throttle abutment plate. — **l**, Central pillar. — **T**, Tickler.
r, Tickler spring. — **N**, Nameplate.

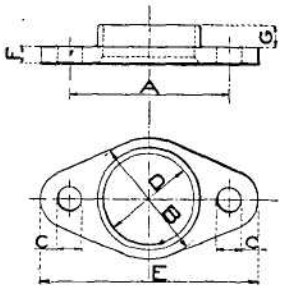
Choice of the Carburettor. — The choice of the carburettor consists in the determination of a suitable diameter. The diameter depends upon the bore and stroke of the engine, the number of cylinders and the speed at which its maximum power is developed.

Generally speaking, however, one can rely upon the induction pipe, or port diameter being correct for the characteristics in question and the carburettor may be chosen accordingly.

In speaking of the size of the carburettor we refer to the diameter of it's offtake. This should always be equal or slightly larger than that of the induction port. The selection of the carburettor being also very directly concerned with the adjustment necessary for the engine in question, we are dealing with it at greater length a little later on under the heading of " Determination of Carburettor size ".

Position of the Carburettor. — The next question is the determination of the best position in

COUNTERFLANGES OF CARBURETTORS.



Carburetor	A	B	C	D	E	F	G
26	48	38	8,5	29	64	7	7
30	53	44	8,5	33	73	7	8
35	65	50	10,5	38	89	7	9
40	72	60	10,5	43	93	8	8
46	78	62	10,5	49	102	9	10

which to mount the instrument. This is generally controlled by the existing induction pipe which can nearly always be employed either directly or by the aid of counter-flanges which we can supply as per attached table.

It is advisable to mount the carburettor in such a way that the pipe work is as simple as possible, free from local enlargements and hairpin bends.

Provision should also be made to apply a hot air pipe connecting up the air intake of the carburettor to a suitable muffle on the exhaust pipe, excepting in the case of the horizontal carburettor. Also it is well to see that the instrument is fitted in such a way that the float chamber can easily be removed, otherwise the advantages of accessibility — which is one of the great points of the " SOLEX " — is lost.

Particularly note also, that excepting in the case of pressure fed petrol systems, the carburettor must always be mounted sufficiently low to ensure of perfect fuel supply in all possible circumstances, and again it is advisable to arrange as far as possible the controls and petrol pipe in such a way that the hand may be inserted under the float chamber for purposes of its ready removal.

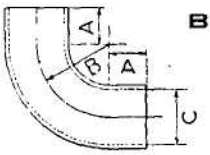
As regards the direction of the float chamber, it is advisable when possible to have this forward.

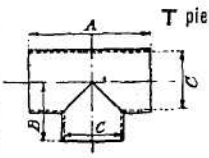
Induction Pipe. — The induction pipe should be as simple as possible and without variations in its diameter, for any local enlargements cause a reduction in the gas speed at this point and tend to produce backfiring in the carburettor owing to deposition of the suspended fuel.

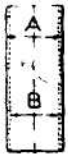
The pipe should be the same diameter, or slightly smaller than that of the carburettor offtake. It is very important when fitting to ensure that the port joint is quite free from air leakage, for entrance of air at that point will interfere seriously with starting and slow running.

Machined Induction Pipes and Parts for building up Induction Pipes. — To facilitate fitting, we can generally supply a correct pipe which will permit of the ready adaption of Solex to the majority of

PARTS FOR MANIFOLD ASSEMBLAGE







Diameter of Carburettor	A	B	C	A	B	C	A	B
22 & 26	20	35	29	60	30	29	29	26
30	20	40	33	70	36	33	33	30
35	20	40	38	80	40	38	38	35
40	22	45	43	86	43	43	43	40

All measurements in millimetres.

well-known engines, a list of our prices for these fitments being supplied on demand. In the case of other types of engines for which we do not stock complete pipes, we can provide corners, bends, and tubes as per the attached table for each size of carburettor.

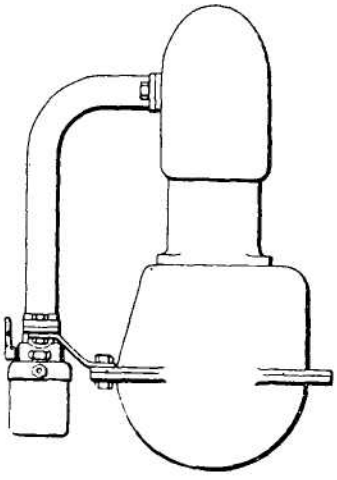


Fig. 3

Support. — In order to prevent vibration in cases where the induction pipe is long and not very rigid, it is well to fix the carburettor to a convenient portion of the engine by means of a light but rigid strip of steel which can be attached to one of the flange bolts. This is only for the purpose of ensuring against horizontal vibrations, the induction pipe itself being invariably sufficient to bear the weight of the carburettor.

Throttle Control. — This is obtained by means of an abutment plate (*fig. 4*) mounted on the flattened end of the throttle spindle.

The abutment plate carries a screw limiting the maximum opening point (*fig.* 4) and it is firmly fixed by means of a spring washer. A screw for the regulation of slow running is also mounted on the other side of the abutment plate. In addition to this, a locating pin is centrally placed and articulates with a series of holes arranged at 45° from each other at the end of the throttle lever so that the latter can be mounted in a variety of positions.

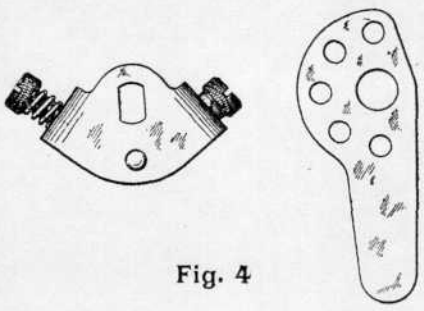


Fig. 4

The lever is normally mounted on the left side looking towards the air intake in the case of MV type engines and at the upper part in the case of the MH type. In certain cases it is necessary to have the control at the right side for MV carburettors and at the lower part in the case of MH instruments.

In such a case, remove the abutment plate from the spindle and interchange respectively the opening limit screw with the slow running adjustment screw. The abutment plate will then take the place of the packing washer that will be noted on the other end of the spindle.

When drilling the throttle lever for attachment of the control rod, note that the radius is equal to 3/4 of the travel, as per attached diagram.

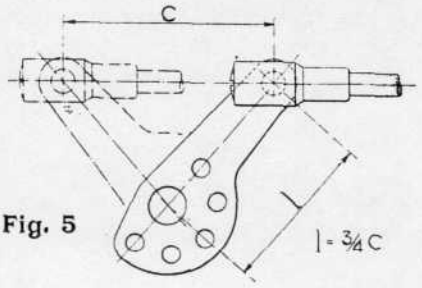


Fig. 5

To facilitate the mounting of the control tod, we can supply on demand a ball joint which gives a minimum of play and a maximum of freedom in the control.

It is advisable to have as few joints as possible between the accelerator pedal and the throttle lever, for a multiplication of articulated joints here represents in the aggregate a good deal of play in the control when they

become worn. In cases, however, where this is unavoidable the best method of guarding against such trouble is to arrange a pull-off spring to operate directly on the throttle lever, so that the various worn surfaces are in constant thrust and the play thus taken up.

Petrol Union and Filter. — To join up the petrol pipe with the union, it is only necessary to solder the former into the swivelling portion of the union. Our carburettors are all delivered as standard with a filter which is placed in the swivelling part in question and the latter is drilled to take a petrol pipe of 8 m/m external diameter. We can therefore supply piping of this size if required.

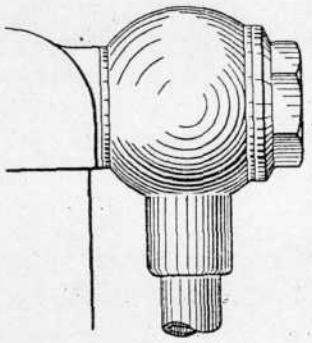


Fig. 6

The filter is placed at the upper part of the float chamber and is therefore very accessible, and the operation of removing and cleaning the gauze is quite a trifling one. It is to be noted that this device is not of the " decanter " order, for the design of the float chamber is such that any water which passes through remains at the base of the chamber and cannot enter the main jet channel until a considerable quantity has accumulated, when it can be quickly emptied on dismounting the float chamber, an operation which can be conducted much more quickly than by dismembering the filter.

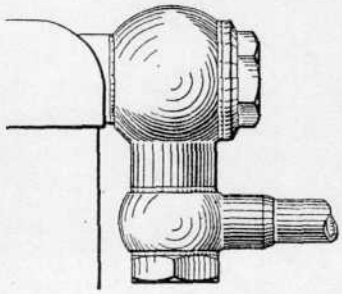


Fig. 7
Fitting indirect Filter

To adapt the filter to a carburettor already fitted with a simple swivelling union, we have provided a slightly modified form which we describe as an " indirect " filter that can be adapted to the existing union without any soldering (see *fig.* 7).

To obtain a correct petrol supply, it is always advisable to give a mean inclination of at least 10 %, to the petrol pipe between the tank and the carburettor.

Easy Starting device. — Some engines when cold present a little difficulty in starting, especially with heavy fuels and with Benzol, thus demanding a much greater turning effort and a temporary rich mixture. Furthermore, the general use of electrical self-starters necessitates the provision of some means of easy starting so as to save the battery as much as possible. To cater for these necessities and ensure immediate starting in the case of obstinate engines we have devised a special arrangement which is attached to the air entrance and controlled by means of a shutter. The latter is kept in the fully open position by a spring when the engine is running and as it must be controlled both at the starting handle and from the dashboard a double ended lever is fitted, drilled at each end.

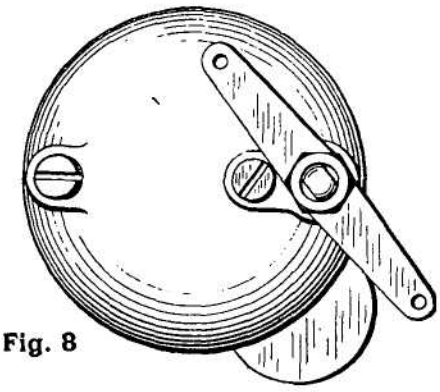


Fig. 8

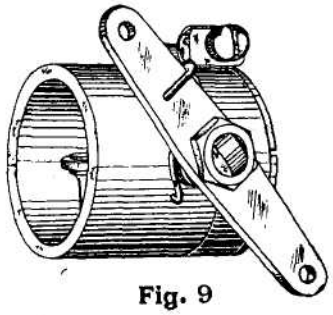


Fig. 9

The starting arrangement for the MH type takes the form of a modified bell (see *fig.* 8). That, however, for the MV is made in two designs. A short one (*fig.* 9) is fitted where no hot air is required, but the longer one (*fig.* 10) is additionally provided with a register for the admission of cold air. These two types can immediately be attached to the carburettor by means of an ordinary clip joint.

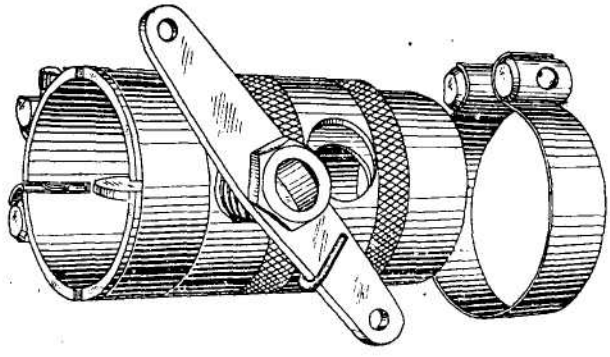


Fig. 10

It is to be noted that the air shutters for the MV type can be mounted on the MH carburettors in cases where it is desired to apply hot air to this model.

Control of the Easy Starting device. — To facilitate this, we can provide a special serrated knob

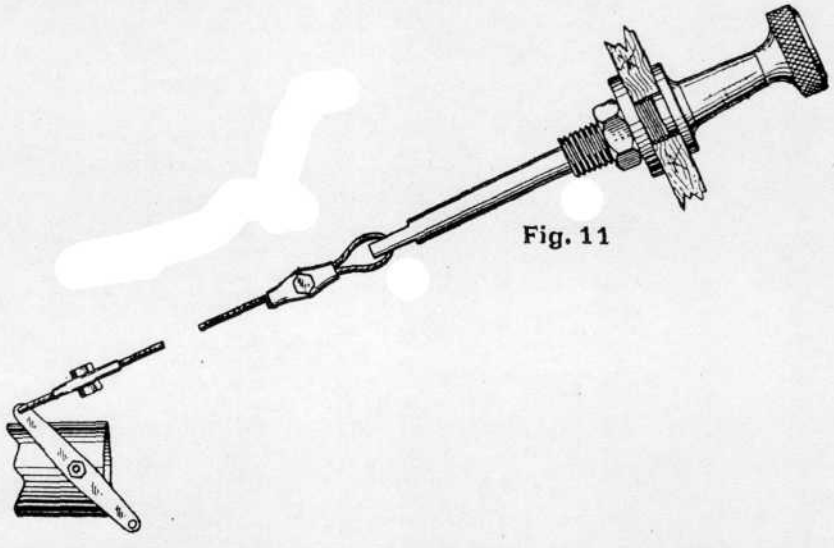


Fig. 11

that can be mounted on the dashboard and attached by means of a multi-strand steel cable to the air shutter lever.

Heating. — The horizontal type, which attains its heat directly by conduction from the cylinder block is, as a rule, sufficiently heated without any extra application of hot air, but in the case of the vertical carburetor it is usually necessary to provide for external heating and generally desirable to make this controllable by means of an air register, so that adjustments may be made for climatic changes.

In the " Solex ", the heating is carried out entirely by air, no form of hot water jacketting being included in any of our carburettors.

Hot air is obtained by means of a muffle mounted on the induction pipe and is led to the carburettor by a tube either flexible or otherwise, as per figure 12.

It is not necessary to solder the attachment, for we can provide a clip joint that will enable this to be done without any mechanical work.

It is necessary always to guard against any restriction in the volume of air provided, for unless absolute freedom is assured here, the engine power is bound to suffer.

When fitting the muffle, note carefully that there is ample air space for perfect volumetric freedom. Any

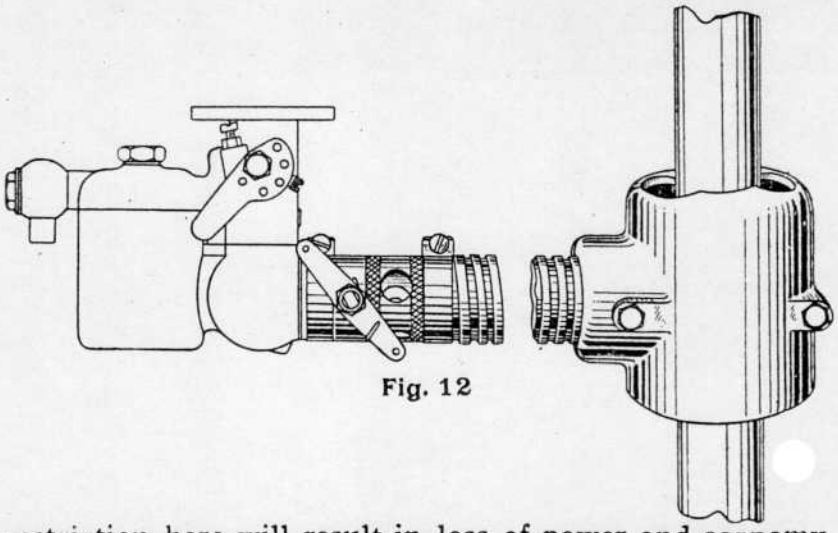


Fig. 12

restriction here will result in loss of power and economy.

Swivelling Air Intake. — To facilitate the fitting of the hot air pipe to the carburettor in cases where its direct entrance is inconvenient, we supply a swivelling air bend which will take up any required position on a horizontal plane. It may be mounted either directly on the carburettor or on the off side of the air shutter when such is fitted. In the former case, a nipple is provided for adaption of the shutter to the clip joint, as per sketch.

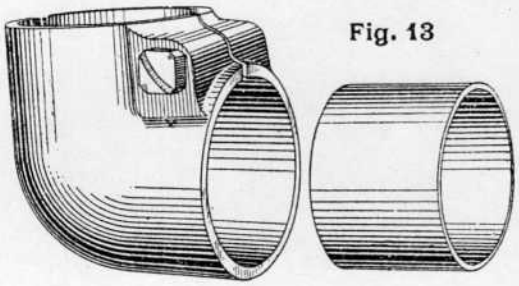


Fig. 13

Flange Governor Throttle. — To facilitate the fitting of carburettors to engines equipped with a governer, we provide a special throttle embodied in a modified flange member which is mounted between the carburettor and the inlet port or pipe, and can be joined up directly to the governor.

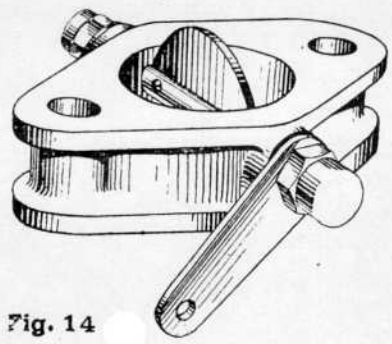


Fig. 14

II

ADJUSTMENT OF THE CARBURETTOR

The adjustment of the SOLEX consists in; —

1st. The selection of an auxiliary jet " g " which will give the best idling, and —

2nd. A main jet which gives best power and acceleration.

These adjustments can be quickly made owing to the extreme accessibility of the jets.

The correct size of choke tube is determined from the table of adjustments further on.

DISMOUNTING

In order to dismount the carburettor for tuning or cleaning, it is only necessary to unscrew the large nut " E " when the float chamber can be withdrawn giving immediate access to both jets without breaking a single joint, losing a drop of petrol, or requiring any form of special key.

When remounting, it is only necessary to see that the members are registering correctly when the assemblage is completed by **moderately tightening the nut "E".**

SLOW RUNNING ADJUSTMENT

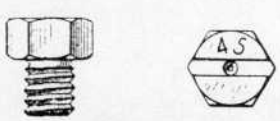


Fig. 15
Auxiliary Jet "g"

When the butterfly is in an approximately closed position, as shown in figure 17, the mixture is supplied by the auxiliary jet " g ". This jet is provided with a slot to enable an ordinary screw driver to be used thereon, and is stamped on the upper part with a number indicating the diameter of its spraying orifice in hundredths of millimetres.

Do not in any circumstances, reamer or interfere with this orifice.

The slow running adjustment has nothing to do with the power setting and can be undertaken with the car at rest.

The adjustment is carried out in two ways; —

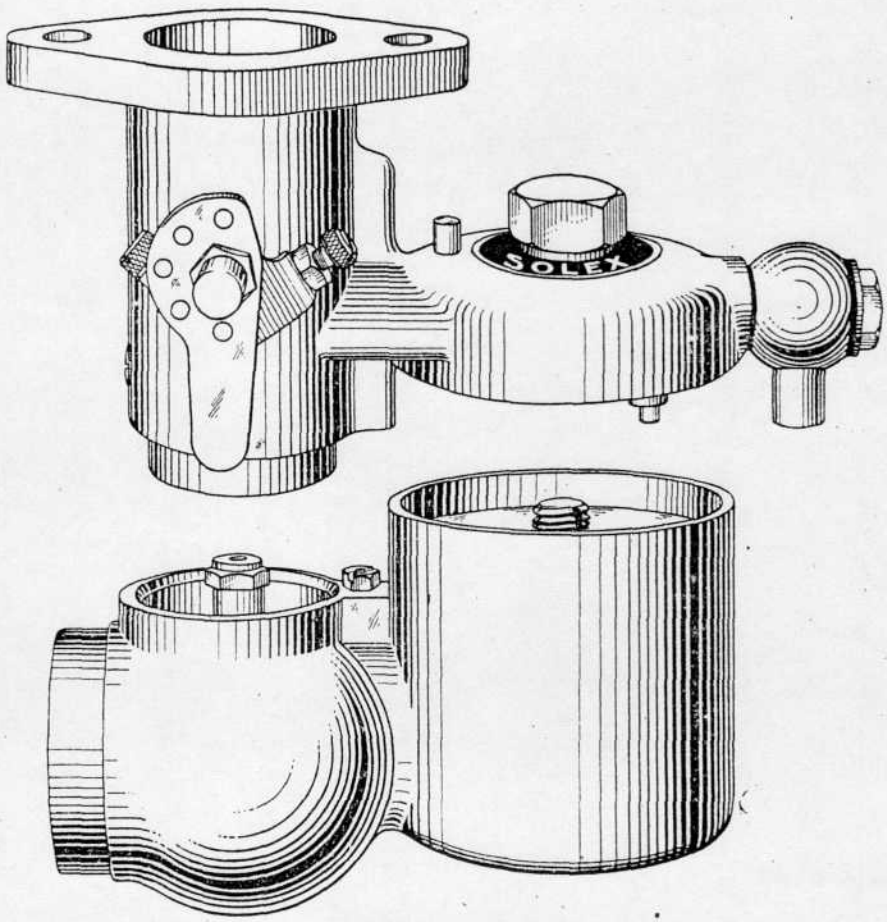


Fig. 16

1st. **Mixture Regulation.** — Consult first the table of adjustments and commence by inserting the jet indicated for an engine of corresponding dimensions.

Excess of fuel is recognised by; —

a) A rhythmic surge popularly described as " hunting ".

b) When the engine gradually slows and stops. petrol will drip from the carburettor on opening the throttle.

c) The plug points will be coated with soot. In this case, reduce the auxiliary jet by one size and try again until perfectly regular idling is obtained.

Insufficient fuel is recognised by; —

Difficult starting and irregular firing, the latter being temporarily cured by depressing the tickler.

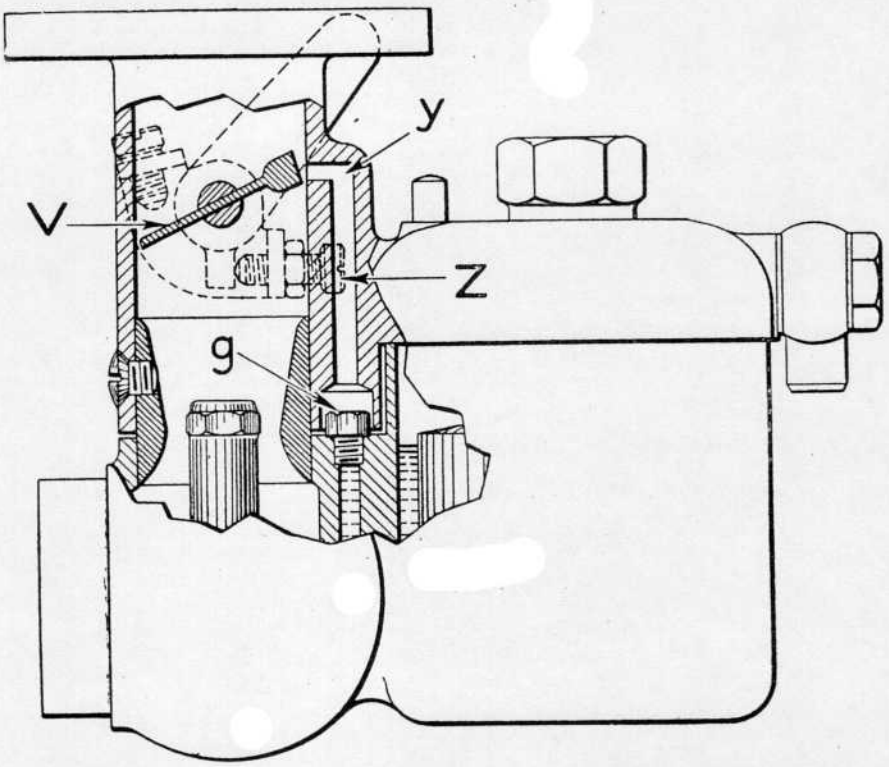


Fig. 17

It is well to note the idling when the engine is at its full working temperature before finally deciding, for, heat will always enrich the mixture.

2nd. **Throttle adjustment for idling.** — This is undertaken by the regulation of the throttle adjusting screw on the abutment plate.

Screw inwards to increase the idling speed and outwards to diminish it.

ADJUSTMENT FOR POWER

First of all, see that the choke tube is of correct size for the engine as per table of adjustment on pages 18 and 19. To remove the choke tube, dismount the float chamber and unscrew the small fixing screw when the choke can be withdrawn with the fingers.

Numbers indicating the size of carburettor and the internal diameter of the waist will be found cast therein.

The approximate size of the choke having been established, refer now to the table and fit to commence with the jet indicated for a given choke and engine capacity.

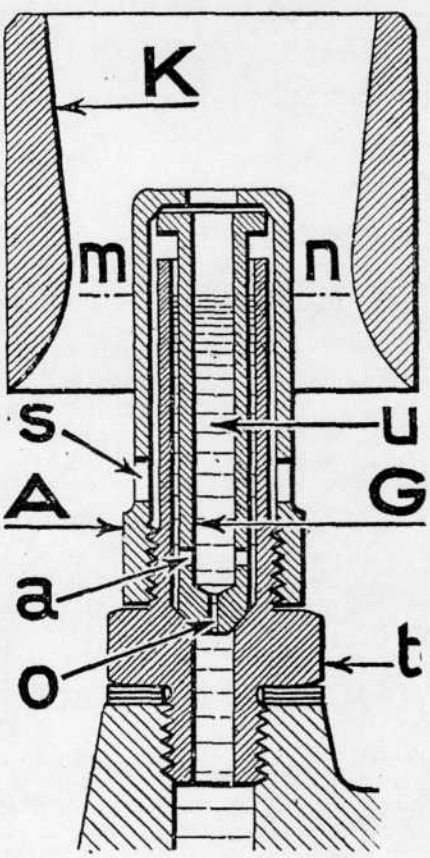


Fig. 18. – Main Jet.

Owing to the variable characteristics of engines and the different speeds at which they are designed to give their maximum HP. It is only possible to approximate theoretically the choke and jet sizes necessary. These may require to be varied up or down according to conditions.

Broadly speaking, the higher the maximum engine speed and the greater the valve and induction area, the larger will be the choke size necessary and *vice versa*, the main jet size being in each case experimentally altered to suit.

To change the main jet unscrew the cap with an ordinary spanner when it can immediately be removed with the fingers, no joint being broken and no fuel lost.

To re-assemble the jet member, replace the jet and screw down the jet cap with **moderate tightness.** Excessive force either here, or in assembling the float chamber is unnecessary, and will damage the carburettor.

SELECTION OF THE CORRECT SIZE OF THE CARBURETTOR

1st. Horizontal or Vertical.

The former is suitable for monobloc engines with a single inlet port and sufficient head of petrol to ensure unfailing supply under all conditions. The latter can be fitted to all engines without exception if a suitable induction pipe is provided.

2nd. Choice of Diameter.

The number of the carburettor indicates the internal diameter of its offtake in millimetres and the correct size can be determined from the tables when the bore, stroke, and speed of the engine are known.

(See *examples* on page 20.)

Table of settings for SOLEX Carburettor, type MV
Theoretical Diameter of Choke tube K.

TABLE 1

Bore	Stroke	Number of R. P. M.										
		1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400
	80	15	15	15	16	16	16	17	17	18	18	18
	90	15	15	16	16	17	17	17	18	18	19	19
55	100	15	16	16	17	17	18	18	19	19	19	20
	110	16	16	17	17	18	18	19	19	19	20	20
	120	16	16	17	18	18	19	19	19	20	20	21
	90	16	16	17	17	17	18	18	19	19	19	20
	100	16	17	17	18	18	19	19	20	20	20	20
60	110	16	17	18	18	19	19	20	20	21	21	22
	120	17	17	18	19	19	20	20	21	21	22	22
	130	17	18	18	19	20	20	21	21	22	22	23
	100	17	17	18	18	19	19	20	20	21	21	22
	110	17	18	19	19	20	20	21	21	22	22	23
65	120	18	18	19	20	20	21	21	22	22	23	24
	130	18	19	19	20	21	21	22	22	23	23	24
	140	18	19	20	21	21	22	22	23	24	24	25
	100	17	18	19	19	20	20	21	21	22	22	23
	110	18	19	19	20	21	21	22	22	23	23	24
70	120	18	19	20	21	21	22	22	23	24	24	25
	130	19	20	20	21	22	23	23	24	24	25	26
	140	19	20	21	22	23	23	24	25	25	26	27
	100	18	19	20	20	21	21	22	23	23	24	24
	110	19	19	20	21	22	22	23	23	24	25	26
75	120	19	20	21	22	22	23	24	24	25	26	27
	130	20	21	21	22	23	24	24	25	26	26	27
	140	20	21	22	23	24	24	25	26	27	27	28
	110	19	20	21	22	23	23	24	25	25	26	27
	120	20	21	22	23	24	24	25	25	26	27	28
80	130	20	21	22	23	24	25	26	26	27	28	29
	140	21	22	23	24	25	26	26	27	28	29	30
	150	22	23	24	25	26	26	27	28	29	30	31
	110	20	21	22	23	24	24	25	26	27	28	28
	120	21	22	23	24	25	25	26	27	27	28	29
85	130	21	22	23	24	25	26	27	28	29	30	31
	140	22	23	24	25	26	27	28	29	29	30	31
	150	23	24	25	26	27	28	29	30	31	32	33
	110	21	22	23	24	25	25	26	27	28	29	30
	120	22	23	24	25	26	26	27	28	29	30	31
90	130	22	23	24	25	26	27	28	29	30	31	32
	140	23	24	25	26	27	28	29	30	31	32	33
	150	24	25	26	27	28	29	30	31	32	33	34

Bore	Stroke	Number of R. P. M.									
		1000	1200	1400	1600	1800	2000	2200	2400	2600	2800
	120	20	21	23	24	25	26	27	28	29	30
	130	21	22	23	24	26	27	28	29	30	31
95	140	21	23	24	25	25	28	29	30	31	32
	150	22	23	25	26	27	28	30	31	32	33
	160	22	24	25	27	28	29	30	31	32	33
	120	21	22	23	25	26	27	28	29	30	31
	130	21	23	24	25	27	28	29	30	31	32
100	140	22	23	25	26	28	29	30	31	32	33
	150	22	24	26	27	28	30	31	32	33	34
	160	23	25	26	28	29	30	32	33	34	35
	120	21	23	24	26	27	28	29	30	31	32
	130	22	24	25	26	28	29	30	31	32	33
105	140	23	24	26	27	29	30	31	32	33	34
	150	23	25	27	28	30	31	32	33	34	35
	160	24	26	27	29	30	32	33	34	35	36
	120	22	24	25	27	28	29	30	31	32	33
	130	23	25	26	28	29	30	32	33	34	35
110	140	24	25	27	28	30	31	33	34	35	36
	150	24	26	28	29	31	32	33	35	36	37
	160	25	27	28	30	32	33	35	36	37	38
	120	23	25	26	28	29	30	32	33	34	35
	130	24	25	27	29	30	31	33	34	35	36
115	140	24	26	28	29	31	32	34	35	36	37
	150	25	27	29	30	32	33	35	36	37	38
	160	26	28	29	31	33	34	36	37	38	40
	130	24	26	28	30	31	33	34	35	36	38
	140	25	27	29	31	32	34	35	36	38	39
120	150	26	28	30	32	33	35	36	37	39	40
	160	27	29	31	32	34	36	37	38	40	
	170	27	29	31	33	35	37	38	40		
	140	26	28	30	32	33	35	37	38	39	40
	150	27	29	31	33	34	36	38	39	40	
125	160	27	30	32	34	35	37	39	40		
	170	28	30	33	35	36	38	40			
	180	29	31	33	35	37	39	40			
	140	27	29	31	33	35	36	38	40		
	150	28	30	32	34	36	37	39	40		
130	160	28	31	33	35	37	38	40			
	170	29	31	34	36	38	40				
	180	30	32	35	37	39	40				

Choice of Size of Carburettor

The choke tube being determined by table n. 1, the size of carburettor can be arrived at by the table n. 2 hereunder.

TABLE N. 2

Choke tube K	Size of Carburettor
15 to 18	26
19 to 21	30
22 to 25	35
26 to 29	40
30 to 40	46

DETERMINING SIZE OF JET

1. MAIN JET

TABLE N. 3

Choke K	Jet G	Choke K.	Jet G	Choke K	Jet G
15	50	24	110	33	170
16	65	25	115	34	180
17	75	26	120	35	185
18	80	27	130	36	190
19	85	28	140	37	200
20	90	29	145	38	205
21	95	30	150	39	210
22	100	31	155	40	220
23	105	32	160		

2. AUXILIARY JET

Determine by expériment the slow running jet, noting the table n. 4 hereunder and according to the size of carburettor fitted.

TABLE N. 4

Carburettor	Auxiliary jet
26	45-50-55
30 or 35	55-60-65
40 or 46	60-65-70

Table of settings for SOLEX Carburettor, type MH
Theoretical Diameter of Choke tube K.

TABLE 1

Bore	Stroke	Number of R. P. M.										
		1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400
	80				12	12	13	13	14	15	15	16
	90			12	12	13	14	14	15	16	16	17
55	100		12	12	13	14	15	15	16	17	17	18
	110	12	12	13	14	15	16	16	17	17	18	19
	120	12	13	14	14	15	16	17	17	18	18	19
	90		12	13	14	14	15	16	16	17	17	18
	100	12	13	14	15	16	16	17	18	18	19	20
60	110	13	14	15	15	16	17	18	18	19	20	21
	120	13	14	15	16	17	18	18	19	20	20	21
	130	14	15	16	17	18	18	19	20	21	21	22
	100	13	14	15	16	17	17	18	19	19	20	21
	110	14	15	16	17	18	18	19	20	20	21	22
65	120	15	16	17	18	19	19	20	21	21	22	23
	130	15	16	17	18	19	20	21	21	22	23	24
	140	16	17	18	19	20	21	21	22	23	24	25
	100	14	15	16	17	18	19	19	20	21	22	23
	110	15	16	17	18	19	20	21	21	22	23	24
70	120	16	17	18	19	20	21	21	22	23	24	25
	130	16	18	19	20	21	22	22	23	24	25	26
	140	17	18	20	21	22	22	23	24	25	26	27
	100	15	17	18	19	20	20	21	22	23	23	24
	110	16	17	19	20	20	21	22	23	23	24	25
75	120	17	18	19	20	21	22	23	24	25	25	26
	130	18	19	20	21	22	23	24	25	25	26	26
	140	18	20	21	22	23	24	25	26	26	27	28
	110	17	19	20	21	22	23	23	24	25	26	27
	120	18	19	21	22	23	23	24	25	26	27	28
80	130	19	20	21	23	24	24	25	26	27	28	29
	140	20	21	22	23	25	25	26	27	28	29	30
	150	20	22	23	24	25	26	27	28	29	30	31
	110	19	20	21	22	23	24	25	26	26	27	28
	120	19	21	22	23	24	25	26	27	28	29	30
85	130	20	22	23	24	25	26	27	28	29	30	31
	140	21	22	24	25	25	27	28	29	30	31	32
	150	22	23	24	25	27	28	29	30	31	32	33
	110	20	21	22	23	24	25	26	27	28	29	30
	120	20	22	23	24	25	26	27	28	29	30	31
90	130	21	23	24	25	26	27	28	29	30	31	32
	140	22	24	25	25	27	28	29	30	31	32	33
	150	23	24	26	27	28	29	30	31	32	33	34

Bore	Stroke	Number of R. P. M.									
		1000	1200	1400	1600	1800	2000	2200	2400	2600	2800
	120	18	20	22	23	24	26	27	28	29	30
	130	19	21	22	24	25	27	28	29	30	31
95	140	20	22	23	25	26	28	29	30	31	32
	150	20	22	24	26	27	29	30	31	32	33
	160	21	23	25	27	28	29	31	32	33	34
	120	19	21	23	24	26	27	28	29	30	31
	130	20	22	24	25	27	28	29	30	31	32
100	140	21	23	24	26	28	29	30	31	32	33
	150	21	23	25	27	29	30	31	32	33	34
	160	22	24	26	28	30	31	32	33	34	
	120	20	22	24	25	27	28	30	30	31	32
	130	21	23	25	26	28	29	31	32	33	34
105	140	22	24	26	27	29	30	32	33	34	
	150	23	25	27	28	30	31	33	34		
	160	23	25	27	29	31	32	34			
	120	21	23	25	27	28	30	31	32	33	34
	130	22	24	26	28	29	31	32	33	34	
110	140	23	25	27	29	30	32	33	34		
	150	24	26	28	30	31	33	34			
	160	24	27	29	31	32	34				
	120	22	24	26	28	29	31	32	33	34	
	130	23	25	27	29	31	32	33	34		
115	140	24	26	28	30	32	33	34			
	150	25	27	29	31	33	34				
	160	25	28	30	32	34					
	130	24	26	28	30	32	33				
	140	25	27	29	31	33					
120	150	26	28	30	32	34					
	160	27	29	31	33						
	170	27	30	32	34						
	140	26	28	30	32	34					
	150	27	29	31	33						
125	160	28	30	32	34						
	170	28	31	33							
	180	29	32	34							
	140	27	29	31	34						
	150	28	30	32							
130	160	29	31	33							
	170	29	32	34							
	180	30	33								

Choice of Size of Carburettor

The choke tube being determined by table n. 1, the size of carburettor can be arrived at by the table n. 2 hereunder.

TABLE N. 2

Choke tube K	Size of Carburettor
12 to 18	26
19 to 21	30
22 to 25	35
26 to 29	40
30 to 40	46

DETERMINING SIZE OF JET

1. MAIN JET

TABLE N. 3

Choke K	Jet G	Choke K	Jet G	Choke K	Jet G
12	60	22	110	32	175
13	65	23	115	33	180
14	70	24	120	34	190
15	75	25	125	35	195
16	80	26	130	36	200
17	85	27	140	37	205
18	90	28	150	38	205
19	95	29	160	39	210
20	100	30	165	40	220
21	105	31	170		

2. AUXILIARY JET

Determine by experiment the slow running jet, noting the table n. 4 hereunder and according to the size of carburettor fitted.

TABLE N. 4

Carburettor	Auxiliary jet
26	45-50-55
30 or 35	55-60-65
40 or 46	60-65-70

From these three factors the choke tube size may be determined by consulting table No 1.

The size of the carburettor follows from No 2 and the approximate jet sizes necessary are shown in No's 3 and 4. When doubtful, choose a carburettor having an offtake diameter most closely corresponding with that of the inlet port or induction pipe.

First Example : A four cylinder engine 80 × 120 either monobloc or cylinders cast in pairs.

Maximum speed 1.600 r. p. m., induction diameter 28 $^{m}/_{m}$. The table on page 18 indicates a 21 choke, which establishes the carburettor size as 30 $^{m}/_{m}$.

In this case, one would therefore fit a 30 MV carburettor with a 21 choke, a main jet of 95, and an auxiliary which may vary between 55 and 65.

Second Example : A four cylinder engine 90 × 140 monobloc with one inlet port and an engine speed of 2.200, and an induction diameter of 40 $^{m}/_{m}$.

A 40 MH is indicated here if petrol head permits. The choke will be 27 and the jets 140 main with an auxiliary between 60 and 70.

For two cylinder engines, the theoretical diameter of the choke should be reduced by one number and the main jet by two or three numbers.

For six cylinder engines, with a single carburettor it is necessary on the contrary to increase slightly the sizes of the choke and main jet.

For six cylinder engines, having their cylinders arranged in groups, it is better to have a carburettor per group, for, otherwise it may be difficult to get perfect distribution.

For six cylinder engines, having a special induction pipe centrally divided and taking two carburettors or a dual instrument, treat each group of three as a separate four cylinder engine.

III

DIAGNOSIS OF FAULTS

No question can arise as to the unsuitability of the carburettor if the correct type has been selected. It is solely a matter of correct fitting and adjustment.

Always conduct diagnosis methodically and never do two things simultaneously, for, it will then be impossible correctly to locate the effect of the alteration.

Remember that the carburettor is a precision instrument and must not be roughly handled.

Avoid always any form of structural alteration for, every detail of design has been carefully thought out, and, in endeavouring to improve the instrument one is much more likely to damage it permanently.

FLOODING

The Solex has four washered joints; —

The Main jet carrier, J1.

The Needle valve seating, J2.

The nipple and union joints in the supply system, J2 and J3.

The last two mentioned, being exterior fittings can easily be examined and tightened if loose, any leakage, however, from the needle valve joints will resolve itself into a drip at the base of the main jet carrier and give the impression of incorrect level. The first thing, therefore, is to assure that all these joints are perfect.

Grit in the Needle Valve. — This is of fairly frequent occurrence when the motor or carburettor is new and is due to pieces of solder, copper oxide, etc. from the petrol pipe becoming lodged in the needle seating or guide. It is easy to dismount and clean the valve, but be careful to use a well fitting spanner in so doing, otherwise the guide may be damaged.

Punctured Float. — Should this happen, the increased weight of the float can easily cause flooding through high level. It is preferable in this case to replace the float; if one has the facilities, however, the puncture can easily be cured with a small application of solder. If this is undertaken, get rid first of the contained petrol by immersing the float in boiling water until all the bubbles cease.

Level too high. — The simplicity of the constant level arrangements make this extremely rare but it can occur unless light fuels are used in a carburettor having a benzol float or wide needle seating, and the cure is to change the float for one of correct weight or use a smaller needle seating.

The weights of the floats for .730 petrol are as follows; —

33 grammes for 26 m/m carburettors.
42 » 30 » »
64 » 35 and 40 m/m carburettors.
110 » 46 and 25 m/m »

We can also supply special benzole floats of which the weights are as follows; —

47 grammes for 30 m/m carburettors.
70 » 30 and 40 m/m carburettors.

To check the petrol level. — This operation is quite simple. It is only necessary to dismount the float chamber, take out the main jet, leaving the carrier

in position and remount the chamber with this member exposed at the side instead of in its proper position. On turning on the tap, the fuel should now rise to within 3 m/m of the top of the carrier.

Too much pressure.— When an autovac is fitted, or, if the head of petrol is fairly normal, the 26 m/m carburettors have a needle valve seating of 2 m/m diameter and the larger types of 30 m/m, 35 m/m, and 40 m/m, have a 2.5 m/m seating, but when the petrol is pressure-fed, or has a head of 6 or 8 feet, the buoyancy of the float may be insufficient to close the needle against this weight of fuel, and in this case slightly smaller seatings should be fitted. We can supply these on request.

DIFFICULT STARTING

It is easy to test whether the petrol is coming through by depressing the tickler, when if there is petrol in the float chamber it will be possible to feel the float.

If one cannot detect its contact with the tickler and cannot cause flooding by depression of the latter, it is then evident that the float chamber is empty. In this case, see that the petrol tap is turned on, that there is petrol in the tank, and finally, by unscrewing the petrol union, that the petrol pipe is clear.

After first fitting, it occasionally happens that the pipe becomes air locked. If this is found to be the case it must be primed in any convenient way.

Instances are also known in which an equivalent condition can be produced by the pipe passing too close to the exhaust manifold when a vapour pocket can be formed and interferes with the flow.

Level too low. — When benzol or heavy spirit is used in a carburettor set for light fuel, this can easily happen. The best cure is to have a heavier float or in some cases the required correction can be effected by putting in the original float upside down, which raises the level about 3 $^{m}/_{m}$.

Auxiliary jet too small. — Increase gradually the size of the jet till the required performance is obtained, but first be sure that the original one was not stopped up.

Throttle opened unduly or insufficiently. — In order to exercise the strong suction on the auxiliary jet necessary for starting, the Throttle must be almost closed. If the carburettor is now flooded it is quite possible when in this position to get a few explosions followed by stopping. This is due to over-richness and insufficient volume. Open slightly the throttle.

Air Leakage. — Difficult starting always results if there is air leakage at any point of the induction system — port joints, carburettor flange joint, or worn inlet valve guides.

Wear in the throttle spindles of very old carburettors will have a similar effect. The depression on the auxiliary jet is thus reduced to the point where its restricted output is insufficient to carburate the additional air that leaks in. Opening the throttle a little wider with additional flooding will generally allow a start to be made, the auxiliary jet size being also increased a little if necessary.

It is however, always advisable to locate and cure the leak at the earliest opportunity, for, good idling will otherwise be impossible.

Ignition faults. — It is always well before blaming the carburettor to be sure that the starting spark is of sufficient intensity. Remember also that many magnetos will not spark efficiently at low speed unless well advanced. If there is anv doubt about the switch, remove the earth wire. See that the contact breaker points are clear and open to .4 $^{m}/_{m}$ and that the plug electrodes are also clean and separated to .6 $^{m}/_{m}$. The correct use of the air strangler will always ensure-easy starting if the ignition is right, regardless of carburettor adjustment. (See page 10.)

BAD SLOW RUNNING

If, in spite of careful auxiliary jet adjustment it is still impossible to get good slow running, air leakage is practically assured. To confirm, slow down as much as possible without stopping, and flood the carburettor slightly when the engine will speed up temporarily.

The same remarks apply here as in the case of difficult starting and the leakage must be stopped before good idling is possible.

BAD ACCELERATION

During cold weather, one must understand that it is not possible to get acceleration immediately after starting up, but it should be possible after running a few minutes.

Insufficient Heating. — If inefficient acceleration persists even when the engine is fully warmed, defective heating is indicated. Examine the arrangements therefore to locate the shortage. See if the muffle is large enough and embraces a sufficient area of hot exhaust pipe to collect the desired degree of heat and volume of air.

Bad Adjustment. – Try a larger main jet "G" and if still bad reduce the choke size to one size smaller; at same time verify from the tables that it is approximately correct.

Bad Ignition. — It is never advisable to attempt brisk acceleration when too much retarded, for the low magneto speed will not produce an efficient spark under these conditions.

Similarly, if the plug gaps are too wide, the compression resistance opposed to the passage of a weak spark during acceleration can easily defeat the magneto and give the impression of bad carburation.

Badly designed Induction Pipe. — In many cases engines are incurably sluggish owing to the induction pipe being too large or of bad shape. The former will cause bad acceleration by providing insufficient velocity to keep the fuel in suspension and the latter will have the same effect owing to unequal distribution.

The best test for latter is by noting the colour and condition of the plug electrodes.

They should all be identical and if not bad distribution is indicated and a more suitable pipe should be fitted.

Total Absence of Acceleration.— When all attempts to open the throttle result in a complete failure to fire at all, the main jet is either stopped up or grossly too small.

DEFECTIVE SPEED ON THE LEVEL

Bad Adjustment. — .Verify the sizes of the choke and jet from the table and try larger ones of each.

Throttle not opening fully. — Verify that when the accelerator pedal is fully depressed the limit screw on the abutment plate is up against its stop fin cast on the body of the carburettor.

Volumetric Restriction. — Examine the hot air arrangements and see that at no place is the area less than that of the carburettor off-take. It should at all points be a little greater than the latter.

Carburettor too small. — This is easy to establish by trying larger chokes. If the speed improves up to the largest choke supplied for that size — (a main jet to suit being used in each case) a larger carburettor is indicated.

Retarded Ignition. — Try a slight advancement or have the timing checked by a competent engineer.

Shortage in fuel supply. — This trouble is indicated by good acceleration up to a certain speed at which an irregular hesitation sets in, accompanied very often by slight back-firing in the carburettor.

Confirm by a short run on a separate test tank placed so as to insure a good head.

Too much Induction Heat. — This is a prolific cause of bad high speed performance. Make a comparative test with the heating reduced or with the bonnet off.

Choked silencer. — With certain kinds of silencers, this also is a frequent cause of speed losses. Confirm by a short run with the silencer off or disconnected.

OVERHEATING

It is very seldom that overheating is due to carburation; with a well designed engine it would be an impossible cause, for the adjustment would have to be so bad that other troubles would be noticed before overheating.

Defective cylinder casting, water circulation, or air circulation are the usual reasons for overheating.

The temperature is raised a little by either too light or too heavy a mixture and a retarded spark will have a similar effect, but these can always be ruled out in a bad case of overheating.

KNOCKING

The only condition of adjustment that can cause knocking is weak mixture. If a larger jet does not cure it one of the many other causes must be sought out. The most usual are; — detonation, excessive spark advancement, carbonization, worn bearings, loose pistons, etc.

EXCESSIVE CONSUMPTION

Examine the carburettor and supply system first for leakage. Then take steps to assure oneself that the consumption figure has been correctly estimated by making an out-and-back run over a milestoned route with an accurately measured quantity of petrol. Do not rely on petrol cans, for their contents are not guaranteed, nor on mileage indicators, which are frequently inaccurate.

For preference make a non-stop run over about 40 or 50 miles. For a more accurate measurement still a graduated test tank should be used.

Bad Adjustment. — If the choke is well chosen and the smaller jets used with which sufficient power and adequate slow running are obtained, the the trouble is not due to carburation.

See that there are no signs of flooding and that the main jet cap is properly tightened.

Defective Heating. — In induction heating arrangements are absent or insufficient, consumption will always suffer, for unduly large jets must be used to get a standard performance. In this connection it is well to mention that final adjustments should always be made when the engine is at its full working temperature.

An engine that will pick up immediately from cold is sure to be wasteful when hot.

Retarded Ignition. — This is a most common cause of waste.

If the ignition is adjustable, always run with it advanced as far as possible consistent with the avoidance of knocking. If the engine cannot be made to knock, undue lateness is indicated, and it would be well to have the magneto timing checked.

Bad condition of the engine.— The state of the engine has always a great bearing on consumption. If piston rings are not gas tight and valves do not seat properly much efficiency is lost both on the compression and on the firing stroke. Weak exhaust springs, excessive tappet clearance, and in many cases actual bad valve timing are other and most prolific causes of waste for which the carburettor becomes the scapegoat.

Remember, however, that after these defects have been remedied, adjustment is nearly always necessary before the full advantage of the overhaul is obtained.

TROUBLES CAUSED THROUGH DEFECTS IN AUXILIARY SUCTION FEED FUEL SYSTEM

A great number of engines are now provided with this type of petrol supply, and it is well to point out some troubles that can arise therefrom.

1. Leakage will readily result if the pipe connections between the tank and the induction system are not tight and this will always cause bad slow running and difficult starting.

2. It occasionally happens with certain types of instruments that a small quantity of petrol passes via the exhaust pipe into the induction system, and when this occurs defective running and heavy consumption will take place.

3. After a long run with fully opened throttle the pipe diameter or, as the case may be, the degree of induction depression may be unequal to maintaining a full petrol supply, especially on ascending a hill. In such a case misfiring will take place accompanied by popping in the carburettor, and unless the throttle is temporarily closed for a few seconds the engine will stop.

In order to check the efficiency of the vacuum operated supply, remove the connection in the induction pipe and carefully plug the hole. The tank will function as an ordinary gravity tank and should maintain full engine power so long as there is any petrol left therein. If in these circumstances the engine functions properly, the carburettor may be absolved from blame and the makers' booklet relative to the auxiliary tank consulted.

"SOLEX" CARBURETTORS "M" TYPE

PRICES OF CARBURETTORS & SPARE PARTS

		REDUCED PRICES SIZE OF CARBURETTORS				
		26 m/m	30 m/m	35 m/m	40 m/m	46 m/m
Carburettor complete Horizontal or Vertical with filter.		£5.0.0	£6.0.0	£7.0.0	£8.0.0	£9.0.0
Spare Parts for Vertical SOLEX "M" Type.	Butterfly	5/6	6/-	6/-	7/-	8/-
	Butterfly Spindle	5/6	6/-	6/6	7/-	7/6
	Screws for Butterfly, per pair	1/-	1/-	1/-	1/-	1/-
	Butterfly complete with Spindle & Screws	12/-	13/-	13/6	15/-	16/6
	Parts fixed on Butterfly Spindle (Standard on all Solex "M" Type)	8/6	8/6	8/6	8/6	8/6
	Butterfly with Spindle complete with all parts	20/6	21/6	22/-	23/6	25/-
	Throttle Chamber with float chamber top	£2/ 5/0	£2/17/6	£3/ 6/0	£3/16/0	£4/16/0
	Body of Carburettor complete	£3/ 5/6	£3/19/0	£4/ 8/0	£4/19/6	£6/ 1/0
	Float Chamber with central stem less Jet Stand	£1/10/0	£1/16/0	£2/ 2/0	£2/ 6/0	£3/ 2/0
Spare Parts for Horizontal SOLEX "M" Type.	Butterfly	5/6	6/-	6/-	7/-	8/-
	Butterfly Spindle	5/6	6/-	6/6	7/-	7/6
	Screws for Butterfly, per pair	1/-	1/-	1/-	1/-	1/-
	Butterfly complete with Spindle and Screws	12/-	13/-	13/6	15/-	16/6
	Parts fixed on Butterfly Spindle (Standard on all Solex "M" Type)	8/6	8/6	8/6	8/6	8/6
	Butterfly with Spindle complete with all parts	£1/ 1/6	£1/ 1/6	£1/ 2/0	£1/ 3/6	£1/ 5/0
	Throttle Chamber with float chamber top	£2/ 2/6	£2/18/6	£3/ 7/6	£3/17/0	£4/16/0
	Body of Carburettor complete	£3/ 4/0	£4/ 0/0	£4/ 9/6	£5/ 0/6	£6/ 1/0
	Float Chamber with central stem less Jet Stand	£1/ 5/0	£1/10/0	£1/14/0	£1/16/0	£2/10/0
	Air Bell without Strangler	10/6	13/6	17/6	£1/ 0/0	£1/15/0
	Choke Tube "K"	4/6	5/6	7/6	9/-	10/6
	Float "F"	5/-	5/-	6/-	6/-	8/6
	Air Strangler complete (Horizontal or Vertical)	18/6	19/6	£1/ 0/0	£1/17/6	£2/ 5/0
	Fixing Collar for Body of Air Strangler complete with screw & bolt	3/6	3/6	4/6	5/-	5/6
Parts for Induction Pipe.	Counterflange with washer and 2 bolts	6/-	6/-	6/6	7/6	8/6
	Flange Washer	1/-	1/-	1/6		
	Flange Bolt	-/6	-/6	-/9	-/9	-/9
	Bend	7/6	8/6	12/6	15/-	
	Teepiece	7/6	8/6	12/6	14/-	
	Copper Tube 12" Length	7/-	7/6	12/6	14/-	
	Copper Tube 20" Length	13/6	14/6	£1/ 0/0	£1/ 2/0	
Parts for Heating arrangements.	Air Strangler with register and fixing collar for Flexible tube	18/6	£1/12/6	£1/15/0	£2/ 0/0	£2/ 5/0
	Hot Air Bend	9/-	10/6	12/-	13/-	16/6
	Register for cold air	4/-	4/6	5/-	5/6	7/6
	Tube for Union	2/9	3/-	3/6	4/-	4/6
	Flexible Tubing for Hot Air, per foot	2/6	2/6	3/-	3/-	3/6
	Fixing Collar for flexible tube with bolt and nut	3/6	3/6	4/6	5/-	5/6
	Flange Governor with 2 washers & 2 bolts	£1/12/0	£1/15/0	£1/17/6	£2/ 2/6	
	Bolt for above	-/9	1/-	1/-	1/6	
	Washer for above	-/9	1/-	1/-	1/6	
	Name Plate	6/-	-/6	-/6	-/6	
	Dismounting Nut		6/-	6/-	6/-	6/-

NOTE. — 26 m/m MH Carburettors are supplied with Strangler as Standard.

"SOLEX" CARBURETTORS "M" TYPE

Hot air Muffs.	No 1 Diameter of Exhaust Pipe 22 to 28 m/m	No 2 Diameter of Exhaust Pipe 26 to 40 m/m	No 3 Diameter of Exhaust Pipe 38 to 48 m/m	No 4 Diameter of Exhaust Pipe 46 to 58 m/m
Price . . .	6/-	8/-	10/-	12/-

PRICE OF PARTS STANDARD ON ALL CARBURETTORS.

	Main Jet	2/-	
	Auxiliary Jet	1/6	
Main Jet Stand Horizontal or Vertical.	Main Jet Stand	4/6	7/3
	Main Jet Stand Cap "MH" or "MV". . . .	2/6	
	Jet Carrier Washer	-/3	
Parts for Butterfly Spindle.	Throttle abutment plate with Screws: Throttle abutment plate . . .	2/6	8/6
	Throttle abutment plate with Screws: Slow running screw	-/11	
	Throttle abutment plate with Screws: Nut for above	-/9	
	Throttle abutment plate with Screws: Throttle stop screw	-/10	
	Throttle abutment plate with Screws	5/-	
	Throttle Lever	1/3	
	Nut for Throttle Spindle . . . . pair	2/-	
	Washer for Above.	-/3	
Swivelling Petrol Union.	Swivelling Union Nut	2/6	5/3
	Swivelling Union	2/6	
	Washer for Union Nut.	-/3	
Direct Filter.	Nut and Bolt for Filter Union.	2/6	8/3
	Union for Filter.	4/-	
	Gauze for Filter.	1/3	
	Large Washer for Filter	-/3	
	Small Washer for Filter	-/3	
Indirect Filter.	Nut and Bolt for Filter Union.	2/6	8/3
	Union for Filter.	4/-	
	Gauze for Filter.	1/3	
	Large washer for Filter.	-/3	
	Small washer for Filter.	-/3	
	Needle and Seating with washer	5/-	
	Washer for Needle seating	-/3	
	Fixing Screw for Air Bell.	-/6	
	Choke Tube fixing screw	-/6	
	Tickler complete.	-/6	
	Screw for collar	-/9	
	Roller with flat for Strangler attachment collar.	-/10	
	Screwed roller for Strangler attachment collar .	-/10	
	Union for suction pipe of Autovac	2/-	
	Dashboard Strangler control	7/6	
	Ball joint.	2/6	
	Copper Tube 6×8 for needle valve . per foot	1/6	
	Cable for Strangler control . . . . . per foot	-/3	
	Clip for cable.	1/-	
	Lever for Strangler horizontal or vertical . . .	1/3	
	Spring for Strangler	1/-	

Special Carburettor for Ford £5.0.0

For spare part prices, see Ford Catalogue Type M.

L'ÉDITION ARTISTIQUE
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