

General Information:

Synchrometer Flow Meter is designed to measure the air flow on the air intake of the carburetor. The indication is more sensitive on the lower side of the scale to ensure most precise adjustment at idle and low R.P.M.

Type BK features a rubber sleeve that can be rotated to open a by-pass to allow a higher air flow. It fits to the outside diameter of approx. 2 inch (48 to 53 mm Ø) without adaptor.

Type SK with a rubber cone is ideal to fit inside ram pipes and intake bores of 1 5/8 to 2 1/8 inch (40 to 55 mm Ø) without adaptor.

If a single instrument is used - Type BK or SK, the following adaptors are sufficient for most carburetors:

No. 18 a short rubber cone for intake bore from 1 1/8 to 2 inch (29 to 51 mm Ø) ideal for Stromberg and S.U. Carburetors

No. 118 a long rubber cone for ram pipes (not necessary for SK)

Instructions:

1. Attach the *Synchrometer* to the carburetor intake.
2. Check if the *Synchrometer* indicates equal air flow on all intakes at idle and higher R.P.M.
3. The air flow deviation should be not more than 1 line of the scale at idle R.P.M. Accelerate several times and observe the air flow to detect and locate jamming linkage, excessive play and weak returning springs etc. (preferable using two instruments)
4. To synchronize the idle air flow, it is suggested to disconnect the linkage or rod between the carburetors to permit a separate adjustment of each carburetor. Adjust the idling stop or idle by-pass until the *Synchrometer* indicate an equal air flow. Check and readjust the idle mixture at this time.
5. Replace the linkage between the carburetors again and recheck the air flow. This linkage (lever or rod) must be adjusted until an equal air flow is indicated at idle, **transition (up and down)** to high idle and higher R.P.M. Check as described above (3)

While a single instrument is sufficient, the use of two matched **SYNCHROMETER** instruments has many advantages: The instruments stay connected to the carburetors and the hands are free to adjust and accelerate etc.

It saves time to locate jamming joints at different R.P.M. The air flow can constantly be observed until the tune up is completed with all timing, mixture and high idle warm up adjustments. On engines with high mileage, the fumes from the crankcase will affect the idle mixture strength and R.P.M. For final tuning without air filter connection to the crankcase, the hose can be extended and connected to the by-pass holes of the Type BK *Synchrometer*.

All adaptors listed can be used with Type BK (with rubber sleeve) and also Type SK (with rubber cone) *Synchrometer*

Two adaptors are required if two matched instruments are used. Exceptions: Twin adaptors such as No. T 40.

The Type BK *Synchrometer* fits many carburetors with intake diameter of approx. 2 inch, such as:

Citroen VISA GT, Mercedes 200, Opel and VW without adaptor. It is also ideal for BMW Motorcycles and fits tightly on the plastic tube (carb. to air filter) which serves as adaptor.



"SYNCHROMETER" Synchron-Tester

CARBURETOR FLOW - METER

Type BK *Synchrometer* to synchronize all multiple carburetor systems. Maximal air flow with open by-pass: 50 kg/h for higher R.P.M. on larger engine. Indication of air flow with by-pass closed: 1 to 35 kg/h. Turning the rubber sleeve closes the by-pass.



Type SK *Synchrometer* to synchronize all multiple carburetor systems. Air flow Indication: 1 to 30 kg/h. It is also suitable for checking and adjusting the air flow of the secondary stage throttle at closed (idle) position on progressive carburetors. (the normal air flow at idle is approx. 1 to 2 kg/h with the throttle closed)



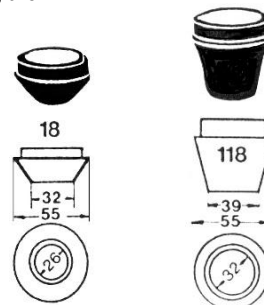
Precise indication at all angles and positions.

The instruments are very robust and withstand excessive air flow and rough treatment.

Universal adaptors for application with single instruments:

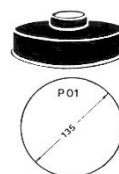
With these "hold on" adaptors, the *Synchrometer* must be held to the carburetor intake.

"SYNCHROMETER" Adaptor



Some adaptors are required regardless if a single or two matching *Synchrometer* are used, because of the special shape of the carburetor intake or difficult to reach intake opening: These and all adaptors on the list AFV are made to fit tight on the carburetor.

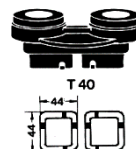
No. P 01
ZENITH INAT
Carburetor: BMW
Mercedes, Opel



No. 06
Weber or
Solex
Alfa Romeo



No. T 40
Twin adaptor
WEBER DGAS
and DGAV



No. 41
Weber DCNF
and various
Carburetors



Adaptors marked P (Polyamide) or T (special) are suitable only for the carburetors listed.

All other adaptors are made of synthetic rubber and can also be used for intake diameter of similar size.

Adaptor combinations are possible for difficult to reach intake openings. Especially suitable for combinations are:

Angle extension No. 08, angle adaptor No. 28 and offset adaptor No.54.



"SYNCHROMETER" Adaptor List for synchronizing multiple carburetors

| | | | | Adaptor.No.: | | | | | Adaptor.No.: |
|--|--------------------------------|--------------|----------------------|--------------|--|--|--|--|--------------|
| ALFA ROMEO | | | | | | | | | |
| all models | SOLEX 40 DDH or | | | | | | | | |
| | WEBER 40 DCOE | (n) | 06 | SK | | | | | |
| Giulia Super | SOLEX 40 PHH | (10) | 45 | | | | | | |
| AUSTIN ROVER and all cars | | | | | | | | | |
| with Stromberg CD and S.U. Carburetors: | | | | | | | | | |
| | S.U. HS 2 | (18) or | 22 | | | | | | |
| Stromberg 150 CD | S.U. HS 4 | (18) | 24 | | | | | | |
| Stromberg 175 CD | S.U. HS 6 | (18) | 26 | | | | | | |
| | S.U. HIF 6 | (18) | 26 + 27 | | | | | | |
| (see Rover) | S.U. HD 8 / HS 8 | (18) | 28 | BK | | | | | |
| Austin Princess 2200 | (+angle extension) | (n) | 08 | | | | | | |
| ROVER | | | | | | | | | |
| 3500 V8 | S.U.HIF (to fit inside flange) | (n) | 08 | BK | | | | | |
| 2600 3,5 | S.U. HS 6 | (18) | 26 | BK | | | | | |
| 2000 TC | S.U. HS 8 | (n) | 28 | BK | | | | | |
| BMW PKW | | | | | | | | | |
| 1600, 1800, 2000 Ti | Solex 40 PHH | (10) | 45 | | | | | | |
| 2,5 / 2,8 - / 3 Ltr. | Zenith INAT | (n) | 01 | BK | | | | | |
| 3,2 Ltr. S | Solex PAITA | (10) | 04 | BK | | | | | |
| BMW Motorcycle | | | | | | | | | |
| R 50 No.23 / R 60 No.25 | | | 23 / 25 | BK | | | | | |
| R 75 to R 100 S: No adaptor required with BK Instruments fit on the original connection tube to the air cleaner | | | | | | | | | |
| CHRYSLER/ SIMCA | | | | | | | | | |
| 160 GT, 180 | Weber 38 ADS | (n) | 41 | BK | | | | | |
| Simca 1300 | | (n) | 03 | | | | | | |
| Simca 1100, Bagheera | Weber 36 DCNF | (n) | 41 | | | | | | |
| CITROEN | | | | | | | | | |
| SM | Weber 42 DCNF | (S) | 118 | SK | | | | | |
| Visa GT | Solex 35 BISA | (B) | | | | | | | |
| DATSUN NISSAN | | | | | | | | | |
| 1600: Nr. 24, 1800, SS | | (18) | 26 | | | | | | |
| 240 Z (without by-pass System) | | (18) | 25 | BK | | | | | |
| 260 Z (with by-pass System) | | (n) | 129 | BK | | | | | |
| FERRARI | | | | | | | | | |
| BB 512 (adaptor combination) | | (S) | 118 + 28 + 54 | SK | | | | | |
| 308 | | (S) | 118 + 18 | | | | | | |
| Weber 40 DCN | | | 13 | | | | | | |
| Weber DCNF | | | 41 | | | | | | |
| FIAT | | | | | | | | | |
| 124 Sport (110 PS) | Weber(with ram pipe) | (18) | 11 | | | | | | |
| Dino Coupe | Weber 40 DCN/ DCNF | (n) | 13 | | | | | | |
| 130 Weber DCF (twin adaptor) | | (n) | 15 | BK | | | | | |
| FORD | | | | | | | | | |
| 20 M etc. Solex DDIST (twin adaptor) | | (n) | 14 | | | | | | |
| 2,0 - 2,3 - 2,6 - 2,8 Solex EEIT | | (n) | 20 | | | | | | |
| 3 Ltr. Weber DGAS (twin adaptor) | | (n) | 40 | BK | | | | | |
| RS: Escort 2 l and Fiesta 1,1 l. | | (S) | (18) | 41 | | | | | |
| HONDA | | | | | | | | | |
| Civic S (also TRIUMPH Acclaim) | | (n) | | | | | | | |
| Prelude 1983 | | (n) | 60 | | | | | | |
| Prelude with catalyst | | (n) | 60 + 61 | | | | | | |
| LANCIA | | | | | | | | | |
| Flavia | Weber 40 DCN | (n) | 13 | | | | | | |
| Fulvia | Weber (with ram pipe) | (18) | 109 | | | | | | |
| LOTUS (see Talbot) | | | | | | | | | |
| Cortina GT | | (n) | 06 | | | | | | |
| LAMBORGHINI 3,0 l V8 Weber DCNF (S) 41 + 118 | | | | | | | | | |
| MASERATI Weber DCNF (S) 41 + 118 | | | | | | | | | |
| MAZDA | | | | | | | | | |
| 323 GT | Hitachi Carburetor | (H 10) | 45 | | | | | | |
| MERCEDES BENZ | | | | | | | | | |
| 200: Solex PDSI: no adapter required | | (B) | | BK | | | | | |
| 220 S to 63: Solex PAITA/PICB | | (n) | 04 | BK | | | | | |
| 220, 230, 250, 280 S with Zenith INAT | | (n) | 01 | BK | | | | | |
| MITSUBISHI | | | | | | | | | |
| Caleste 2000, Sapporo GSR 2000 | | (H 10) | 45 | | | | | | |
| OPEL | | | | | | | | | |
| Rallye Kadett: no adapter required | | (B) | | | | | | | |
| Rekord Sprint | Weber 40 DFO | (n) | 03 | | | | | | |
| All 6 Cyl. .with Zenith INAT | | (n) | 01 | BK | | | | | |
| PEUGEOT | | | | | | | | | |
| 304 S | 35 EEISA (Solex) | (n) | 20 | | | | | | |
| 205 | no adapter required | (B) | | | | | | | |
| PORSCHE | | | | | | | | | |
| 616 and all carb. with Zenith NDIX | | (n) | 11 | | | | | | |
| Super 90, 911, 912, 914/6 etc. (with BK No 118) | | | | | | | | | |
| or all models with ram pipes | | (S) | | SK | | | | | |
| RENAULT | | | | | | | | | |
| Albine, R 8 Gordini, | Weber 40 DCOE | (n) | 13 | | | | | | |
| R 12 G | Weber 45 DCOE | (n) | 109 | | | | | | |
| SAAB | | | | | | | | | |
| GLE | Stromberg CD | (n) | 36/25 or 109 | | | | | | |
| TALBOT | | | | | | | | | |
| Sunbeam ,Stromberg 150 CD | | (18) | 24 | | | | | | |
| Sunbeam Ti 1600 | Weber 40 DCOE | (n) | 36 +25 | | | | | | |
| Sunbeam Lotus Dell' Orto DHLA | | (n) | 25 | | | | | | |
| TOYOTA | | | | | | | | | |
| Celcia 1600 ST | | (10) | 45 | | | | | | |
| Celcia GT | | | 26 | | | | | | |
| VOLVO | | | | | | | | | |
| 122 S, 544, B 16 | S.U. HS 4 | (18) | 24 | BK | | | | | |
| B 30, S.U.HS 6 / Stromberg 175 CD | | (18) | 26 | BK | | | | | |
| 144 S, B 20 D | S.U. HIF 6 | (18) | 26 + 27 | BK | | | | | |
| VW No adaptor required for intake with 2 inch diameter: | | | | | | | | | |
| Type 3: 1500/1600: | | (B) | | BK | | | | | |
| Type 2 and 4: Transporter, Bus, 411 | | (n) | 45 | | | | | | |
| K 70 | Solex 40 DDHT till 1973 | (n) | 116 | BK | | | | | |

All adaptors listed fit to Type BK (with rubber sleeve) and also Type SK (with rubber cone).

The special adaptors with a tight fit are required if two **Synchrometer** (preferably Type BK) are used.

The suggested type is shown after the adapter No.:

BK = preferably **Type BK** for a higher air flow with open by-pass to check and synchronize at higher R.P.M.

SK = preferably **Type SK**

Normally a single **Synchrometer** is sufficient.

However, the tune up specialist will save time by using two or more instruments:

The instruments stay connected to the carburetor with hands free to accelerate and check at various R.P.M.

Two adaptors are required if two instruments are used except twin for adaptor No.14, 15 and 40.

(B) No adaptor required if a single **Type BK** is used.

(S) No adaptor required if a single **Type SK** is used.

The code shown with the adaptor No.(x) indicates which adaptor is suitable if a single Synchrometer is used:

(n) This adaptor is necessary, regardless if a single or two matched Synchrometer are used.

(18) Adaptor No. 18 suitable for single Synchrometer

Synchronize Carburetors fast and accurately with



SYNCHROMETER

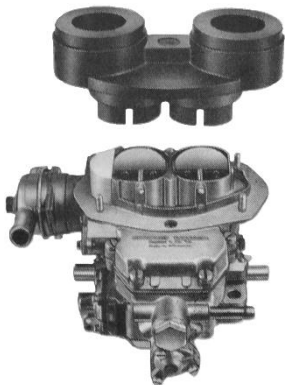
Type BK



**Synchrometer Type BK
Carburetor Air Flow Meter**

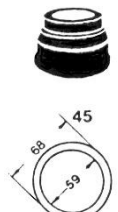
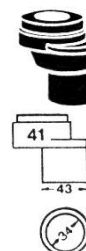
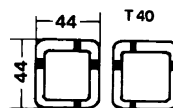
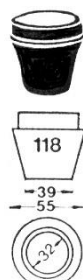
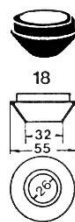
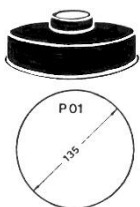
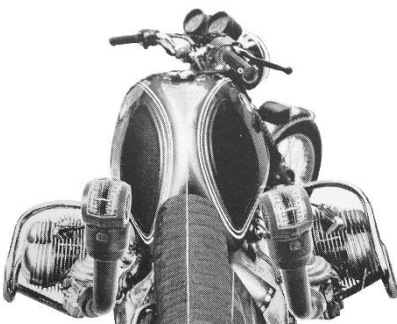
Features an additional by-pass for higher air flow to provide precision balancing also at higher RPM without changing the mixture strength at idle.

Indication range:
with the by-pass closed: 1 to 35 kg/h



**Example: Two-barrel Carburetor with
twin adapter (for example No.40).**

Example: BMW Motorcycles
The rubber sleeve of the Type BK fits **without adapter** to the air tube between the Carburetor and the air filter.



Type SK



**Synchrometer Type SK
Carburetor Air Flow Meter**

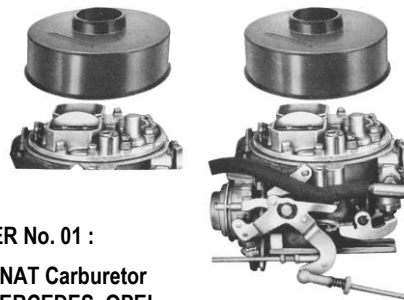
The rubber cone fits into the ram-pipes of the carburetors for a positive air tight seal without adapter.

The indication range is 1 to 30 kg/h to synchronize all carburetors. With the extended calibration at 1 to 3 kg/h, it is also especially useful to check the secondary throttle adjustment:
(The air flow at idle (closed position))

The large, easy to read face is numerical calibrated in kg per hour air flow delivers fast measurement for all types of carburetors, regardless of horizontal or vertical position.

Synchrometer, an important instrument for the conscientious tune-up specialist that provides precise information on all multiple carburetor systems at idle and at midrange transition modes and quickly spots jammed shafts and misaligned throttle plates.

If two or more Synchrometer instruments are applied (preferably Type BK), the hands are free to check and adjust the throttle linkage. Special adapters will hold the Synchrometer tightly instruments to the Carburetor intake:



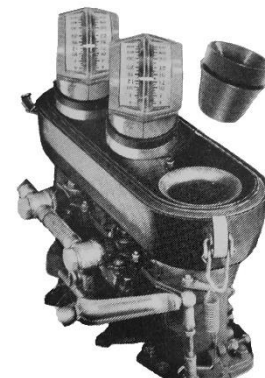
ADAPTER No. 01 :
Zenith- INAT Carburetor
BMW, MERCEDES, OPEL

Ideal for the tune-up specialist:
Sets of two or more instruments together with the special adaptors (preferably type BK with the tight fitting rubber sleeve) or Type SK with rubber cone which fits perfectly to ram pipes intake.

For single application, the Synchrometer can be used without adaptor or with the universal (hold-on Adaptor) Cone No.18 or angle plate No.01

The adaptors can be used with both type BK or SK Synchrometer.

However, the rubber sleeve of the type BK has a tighter fit to the adaptors.

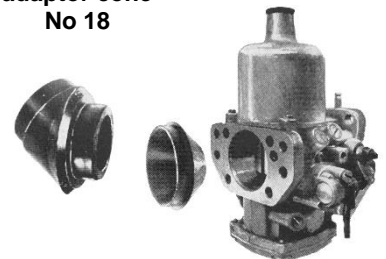


Nr. 118

**Ram pipes : Synchrometer Type SK
or Type BK with adaptor No 118**

Example S.U. and Stromberg Carburetor

**Special adapter
Nr.22, 24
26, u. 28 or
with universal
adaptor cone
No 18**





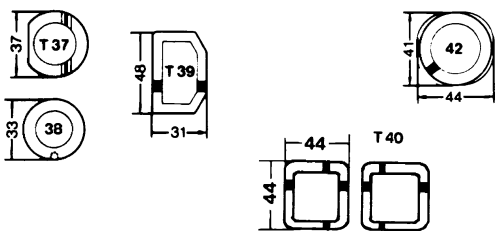
Instructions to test and adjust the throttle plate idle stop (the clearance at closed position) of the secondary stage of two-barrel carburetors with the **Synchrometer Carburetor Air Flow-Meter**

1. Simply place the **Synchrometer Flow Meter** into the secondary throat, using an adapter if necessary and check the air flow at idle speed.
2. **Operate the secondary throttle** (on the linkage or vacuum connection lever) **shortly up to approx. 10 kg/h** and release it again.
Repeat several times to check if the throttle valve is moving freely and always **returns to the idle stop** completely.
3. **If throttle, shaft and linkage are moving freely**, the flow meter will always show the **former air flow value at idle**.
4. If the air flow always returns to this former value and if this value is with the tolerance (approx. 1,5 kg/h at idle), the mixture strength and RPM can be adjusted and it will stay that way.
5. If the air flow shows a higher or lower value and changes every time after the throttle is operated, the **mixture strength** and the **idle RPM** are also upset. It is useless to attempt the adjustments.

The throttle valve, shaft, linkage or rod must first be corrected to move freely before a stable tuning adjustment at idle can be achieved.

Adaptors for secondary throat:

| No. | suitable for | | approx.:size mm |
|------|--------------|--------------|-----------------|
| T 50 | Solex | 2 B 2 | 36 x 30 |
| T 42 | Solex | 32TEIE | 41 Ø |
| T 42 | Weber | 32ADF 4 | 41/44 |
| T 46 | Weber | 34DATR, DMTR | 42 Ø |
| T 49 | Weber | DFAV,DMS,DFH | 38 x 38 |
| T 37 | Weber | DFT | 37 |
| T 40 | Weber | 32/36 DGAV | 44 x 44 |
| 38 | Weber | DGS 1 | 33 Ø |
| T 39 | Weber | 38/36 DM 1 | 31 x 48 |
| T 47 | Weber | DMTR | 37 |



Carburetor Flow-Meter **Synchrometer Type SK**

Air flow range 1 to 30 kg/h with most precise indication at 1 to 3 kg/h

To synchronize multiple Carburetor systems and to check the idle stop adjustment of the secondary stage of two-barrel progressive carburetors



How important is the clearance at closed position ?

On two-barrel progressive carburetors, this throttle is only theoretically closed and the stop lever holds it "just a crack" open to prevent the plate touching and wearing into the housing.

This "just a crack air leak" is compensated by the idle mixture adjustment of primary stage

However, if this small "air leak" changes every time after the secondary throttle returns to the "closed" position, it will upset the idle mixture adjustment of the primary stage:

The throttle stop may be adjusted correctly, but the throttle plate is contaminated or jamming and does not always return to the former position. This can easily be detected by checking the air flow value directly at idle RPM.

Experienced air flow values of the secondary stage throttle at idle (closed position) :

Weber Carburetors: 1,8 to 2,5 kg/h
Solex Carburetors: 1,3 to 1,8 kg/h
Solex Carburetors which have a small "by-pass hole" in the throttle plate (easily visible): 4 to 5 kg/h
Zenith INAT Carburetors: 1,0 to 1,5 kg/h

The air flow values of the secondary throttle are on the higher side on new and rebuild clean carburetors.

Deposits on the throttle plate and wear on the stop lever will reduce this air flow after some time.

