

# SACHS

FICHTEL & SACHS AG  
D-8720 SCHWEINFURT, GERMANY

## SACHS 80B

<b>MODEL</b>	<b>80B</b>
Displacement—cc .....	73
Bore—MM .....	46
Stroke—MM .....	44
Oil to Fuel ratio .....	1:25
Spark plug—Bosch .....	W225T1
Electrode gap—inch .....	0.020-0.024
Ignition timing—inch .....	0.06-0.08 BTDC
Breaker point gap—inch .....	0.014-0.018

Illustrations courtesy of Fichtel & Sachs AG.

### MAINTENANCE

#### SPARK PLUG AND IGNITION.

Recommended spark plug for normal operation is Bosch type W225T1 or equivalent such as Autolite type AE1X or Champion type L81. Spark plug electrode gap should be 0.5 MM (0.020 inch).

Breaker point gap should be 0.35-0.45 MM (0.014-0.018 inch) at maximum opening. Breaker points are adjusted through holes in flywheel after removal of recoil starter assembly and starter drum (1—Fig. SA1-7). Note: Screws securing starter drum to flywheel are coated with a locking compound. Use caution to prevent damage during removal. Ignition should occur, breaker points just open, when piston is 1.5-2.0 MM (0.059-0.079 inch) BTDC. Engine should be in correct position for ignition when "M" mark on flywheel is aligned with timing mark (TM—Fig. SA1-1) on crankcase. Piston is in TDC position when "O" mark on flywheel is aligned with mark on crankcase. Timing may be adjusted a small amount by varying breaker point gap within the recommended range of

0.35-0.45 MM (0.014-0.018 inch). Flywheel must be removed and stator plate repositioned if further adjustment is necessary. Screws that secure starter drum to flywheel should be coated with a locking compound and

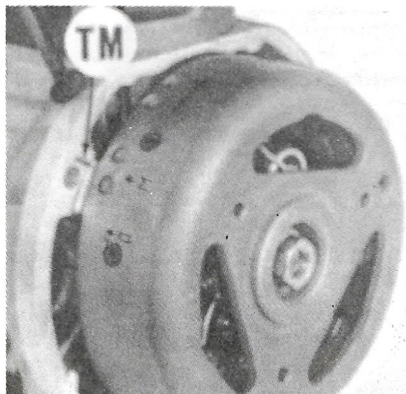


Fig. SA1-1—Breaker points should just open as "M" mark on flywheel aligns with timing mark (TM) on crankcase.

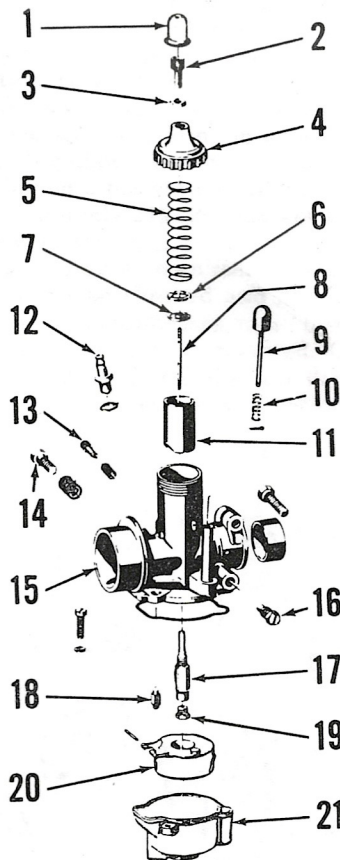


Fig. SA1-2—Exploded view of Bing carburetor used on 80B.

- |                    |                      |
|--------------------|----------------------|
| 1. Cover           | 12. Inlet fitting    |
| 2. Adjuster        | 13. Pilot air screw  |
| 3. Lock nut        | 14. Idle speed screw |
| 4. Cap             | 15. Throttle body    |
| 5. Return spring   | 16. Idle jet         |
| 6. Retainer        | 17. Needle jet       |
| 7. Jet needle clip | 18. Inlet needle     |
| 8. Jet needle      | 19. Main jet         |
| 9. Tickler         | 20. Float            |
| 10. Spring         | 21. Float bowl       |
| 11. Throttle slide |                      |

tightened to 61-67 inch-pounds torque on reassembly.

Flywheel must be removed to renew breaker points, condenser or ignition coils. Air gap between pole shoes and flywheel should be 0.25-0.35 MM (0.010-0.0137 inch). Flywheel retaining nut should be tightened to 27.5-28.9 Ft.-Lbs. torque.

**CARBURETOR.** Refer to Fig. SA1-2 for an exploded view of 17MM Bing carburetor used. Carburetor adjustments should be made with engine at normal operating temperature. Initial setting of air screw (AS—Fig. SA1-3) is 2 turns out from a lightly seated position. Adjust idle speed screw (IS) to obtain slowest smooth idle speed possible. Standard size of idle jet (16—Fig. SA1-2) is #45 and standard size of main jet (19) is #80.

**LUBRICATION.** Engine is lubricated by oil mixed with the fuel. Oil intended for use in air cooled two cycle engines should be mixed with regular gasoline in a ratio of 1 part oil to 25 parts gasoline. Mix fuel thoroughly in a separate container before filling fuel tank.

### REPAIRS

#### PISTON, RINGS AND CYLINDER.

Cylinder and piston may be removed after removing intake and exhaust system. Cylinder head is secured with four screws (2—Fig. SA1-5). Cylinder is held to crankcase by four stud nuts. A shop towel should be stuffed around connecting rod as cylinder is lifted to prevent carbon particles or pieces of broken piston rings from falling into crankcase. Do not

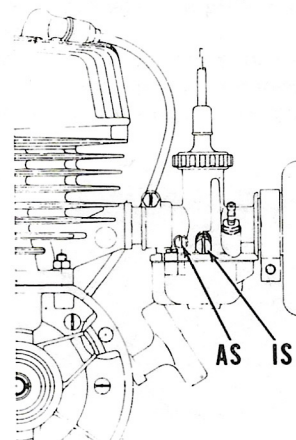
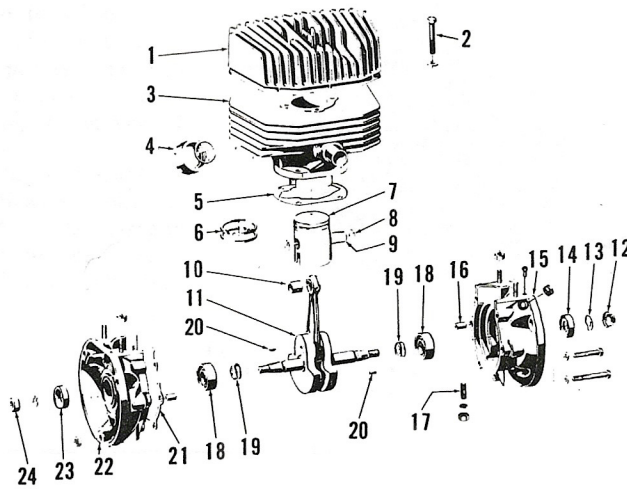


Fig. SA1-3—View showing location of idle speed screw (IS) and pilot air screw (AS).

Fig. SA1-5—Exploded view of Sachs 80B engine.

1. Cylinder head
2. Screw
3. Cylinder
4. Exhaust pipe nut
5. Cylinder base gasket
6. Piston rings
7. Piston
8. Piston pin clip
9. Piston pin
10. Small end bushing
11. Crankshaft assembly
12. Nut
13. Spring washer
14. Seal
15. Crankcase half
16. Aligning dowel
17. Stud
18. Ball bearing
19. Shims
20. Key
21. Gasket
22. Crankcase half
23. Seal
24. Nut



twist cylinder while lifting or piston rings will be damaged. Pistons and rings are available in standard and three oversizes.

Piston may be installed after being heated to 160-170 degrees F. to aid installation of piston pin. Install piston with arrow on dome toward exhaust port (front). Install new piston pin retaining clips on each reassembly. Install cylinder base gasket (5) with coated side down. Coat cylinder, piston and rings with engine oil, then press cylinder straight down onto mounting studs. Twisting cylinder while installing may cause piston ring breakage. Tighten cylinder base nuts to 51-61 inch-pounds torque. Install cylinder head and tighten retaining screws to 121-139 inch-pounds torque using an "X" pattern to prevent warpage.

**CRANKCASE, CRANKSHAFT AND CONNECTING ROD.** Connecting rod small end bushing may be renewed without separating crankcase sections. Use suitable tools to prevent rod from being bent as bushing (10) is pressed in. Make certain that oil hole in bushing is aligned with oil hole in rod. Bushing must be reamed so that piston pin is a snug thumb press fit with a light coating of oil.

Crankcase sections must be separated to remove the crankshaft assembly. Dismount engine from frame and remove recoil starter assembly (6 through 16—Fig. SA1-7). NOTE: Countersunk screws used to secure drum (1) to flywheel are coated with a locking compound. Use care to prevent damage on disassembly. Remove magneto flywheel, mark stator for correct reinstallation and remove stator. Locking compound is used on stator plate screws. Remove cylinder and piston as previously described, then remove screws holding crankcase sections together. Heating crankcase assembly on a hot plate or in an oven to approximately 212-257 degrees F. will ease disassembly.

Axial play of crankshaft in crankcase must be checked and adjusted if necessary if crankcases, main bearings and/or crankshaft is renewed. Check axial play as follows: Measure distance from bearing seat in each crankcase

half to mating surface as shown in Fig. SA1-6. Be sure to include the crankcase gasket in one of the measurements. Add these figures to obtain distance between bearing seats. Measure width of crankshaft assembly on outside edges of main bearings. Difference between crankshaft measurement and crankcase measurement is axial play. Desired axial play is 0.1 MM (0.0039 inch). Vary number and thickness of shims (19—Fig. SA1-5) to obtain desired axial play.

Thoroughly clean all components before assembly. Heating crankcase sections to 212-257 degrees F. will ease reassembly. Coat mating surfaces of crankcase with a thin, even application of non-hardening type gasket sealer and install a new gasket. Use a locking compound on crankcase screws and tighten to 69-90 inch-pounds torque. Use heat resistant grease in grooves and on lips of crankcase seals and press them into crankcase. Use a locking compound on stator mounting plate screws and tighten to 52-69 inch-pounds torque. Use locking compound on stator plate screws and tighten to 35-52 inch-pounds. Install flywheel and tighten retaining nut to 27.5-28.9 Ft.-Lbs. torque. Install piston and cylinder as described in previous section and check ignition timing. Install starter drive drum using locking compound on the screws and torque them to 61-67 inch-pounds. Install recoil starter assembly.

**RECOIL STARTER.** Refer to Fig. SA1-7 for an exploded view of recoil starter assembly used. Rope (15) may be renewed without completely disassembling unit if rope is not broken. Remove starter assembly from engine and pull rope completely out of housing so that knotted end of rope is visible in housing. Secure pulley so that it cannot rewind, reach inside starter with a wire hook and remove rope from starter. Obtain a length of rope 47 1/4 inches long, install on pulley and reinstall starter.

Complete disassembly is necessary to renew recoil spring. Remove starter assembly from engine, remove pull

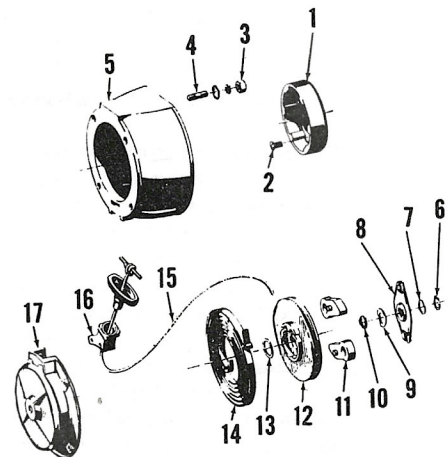


Fig. SA1-7—Exploded view of recoil starter assembly used.

- |                |                     |
|----------------|---------------------|
| 1. Drive drum  | 10. Shim            |
| 2. Screw       | 11. Pawls           |
| 3. Nut         | 12. Rope pulley     |
| 4. Stud        | 13. Shim            |
| 5. Housing     | 14. Recoil spring   |
| 6. Snap ring   | 15. Rope            |
| 7. Shim        | 16. Rope guide      |
| 8. Disc        | 17. Starter housing |
| 9. Wave washer |                     |

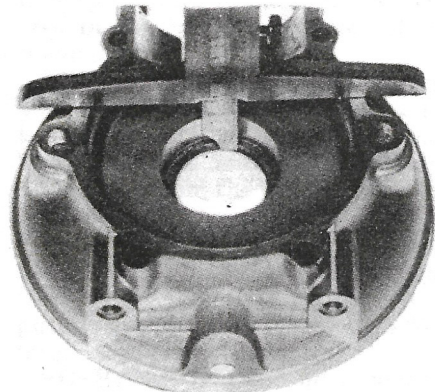


Fig. SA1-6—Interior width of crankcase must be determined to properly shim crankshaft. Refer to text.

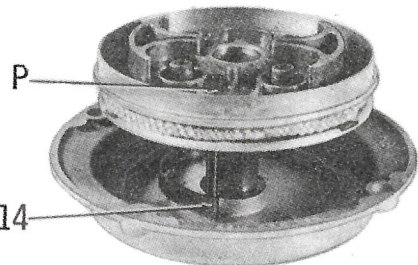


Fig. SA1-8—When reinstalling rope drum, use pin from pull handle (P) to guide end of rewind spring (14) into recess in drum.

## SERVICE

handle and allow rope to wind fully into starter assembly. Remove snap ring (6), disc (8) and pawls (11). Remove rope pulley (12) using caution to prevent possible injury from recoil spring uncoiling.

Install spring in starter housing (17) with coil winding clockwise from inside. Press outer spring loop in right (viewed from inside) recess inside starter housing. Wind rope counter-

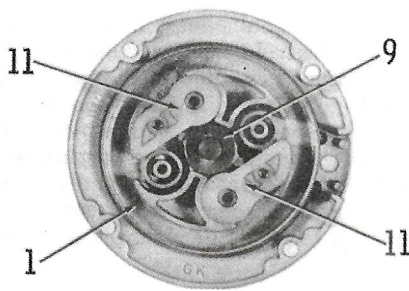


Fig. SA1-9—Starter pawls (11) should be positioned as shown when reassembling. Be sure wave washer (9) is installed.

## Speedway Widow Maker

clockwise (viewed from engine side) onto rope pulley (12). Grease bore of rope pulley and install. A punch or the pin from the pull handle anchor can be used to align inside loop of recoil spring with recess in rope pulley. (Fig. SA1-8). Turn rope pulley counterclockwise until end of rope can be pulled out at rope guide. Attach handle and starter pawls. Check unit for full rewind then reinstall.

# SPEEDWAY

SPEEDWAY PRODUCTS, INC.  
160 East Longview Avenue  
Mansfield, Ohio 44905

## WIDOW MAKER

<b>MODEL</b>	<b>1402</b>
Displacement—cc	73
Bore—MM	46
Stroke—MM	44
Oil to Fuel ratio	1:25
Spark plug—Bosch	W225T1
Electrode gap—inch	0.020-0.024
Ignition timing	0.06-0.08 inch BTDC
Breaker point gap—inch	0.014-0.018
Tire size—Front	3.50x14
Rear	3.50x14
Tire pressure—Front	24 psi
Rear	24 psi
Rear chain free play—inch	1/2-3/4
Number of speeds	T.C.*
Weight—Lbs. (Approx.)	125

\*Variable speed torque converter.

Illustrations courtesy of Speedway Products, Inc.

### MAINTENANCE

**ENGINE.** All maintenance procedures pertaining to the engine are covered in the Sachs 80B section of this manual.

**TORQUE CONVERTER.** A variable speed torque converter is used to transmit engine power to a jackshaft. The rear wheel is driven by a roller drive chain from the jackshaft. Torque converter idler bearings should be lubricated periodically with a few drops of oil. NOTE: Excessive oiling of bearings will cause oil to be thrown on pulley flanges and adversely affect torque converter operation.

**SUSPENSION.** The oil dampened front suspension unit contains 3 oz. of SAE 10 hydraulic oil in each side. Front forks must be partially disassem-

bled to drain and renew oil. Prop motorcycle up with front wheel off ground and remove front wheel. Reinstall front axle and slide dust cover (7—Fig. SP 1-1) up fork tube. Use a suitable spanner or a strap wrench to loosen packing nut (9), then remove axle and pull lower tube (14) away from fork assembly. Drain, clean with solvent and reassemble front fork. A locking compound should be used on threads of packing nut (9). Remove handlebar assembly, plugs (4) and pour proper quantity of oil into each fork tube.

Front fork assembly may be removed by propping motorcycle up with front wheel off ground and removing nut (3) and bolt (1).

Rear suspension units should be renewed if bent or otherwise damaged.

### REPAIRS

**ENGINE.** All repair specifications pertaining to the engine are covered in the Sachs 80B section of this manual.

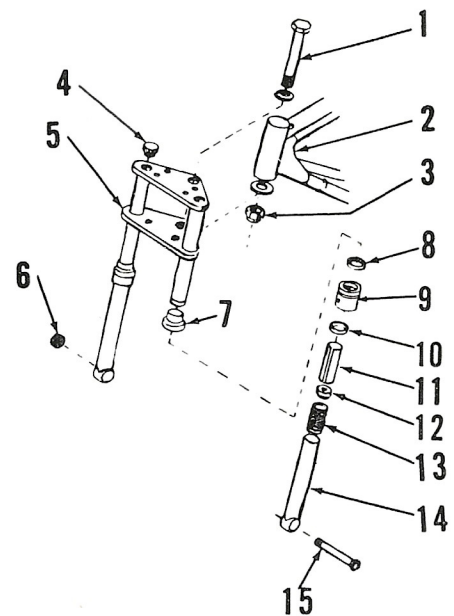


Fig. SP1-1—Exploded view of Widow Maker front suspension unit.

- |                  |                 |
|------------------|-----------------|
| 1. Stem bolt     | 9. Packing nut  |
| 2. Frame head    | 10. Slider      |
| 3. Nut           | 11. Spacer      |
| 4. Plug          | 12. Spring seat |
| 5. Fork assembly | 13. Spring      |
| 6. Axle nut      | 14. Lower tube  |
| 7. Dust cover    | 15. Axle        |

**TORQUE CONVERTER.** The Speedway Widow Maker uses a variable speed torque converter to provide gear reduction instead of a multiple speed transmission as found on most other small motorcycles. Refer to the TORQUE CONVERTER section in the SERVICE FUNDAMENTALS section of this manual for basics of operation.

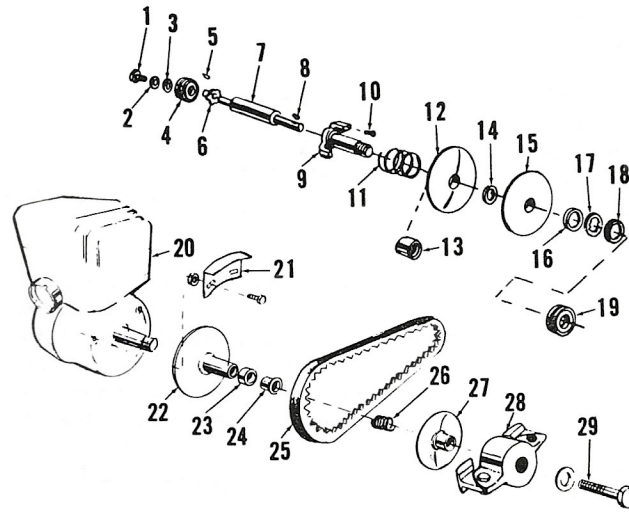
To disassemble drive pulley assembly, remove belt guard, unscrew retaining capscrew (29—Fig. SP1-3) and remove drive cover assembly (28). Remove movable flange (27), drive spring (26), idler bearing (23), belt roller retainer (24) and fixed flange (22). Inspect components for excessive wear or damage. Inspect flange faces for pitting, scoring or grooves. To reassemble, reverse disassembly procedure. Lubricate idle bearing with oil on inner surface. Do not allow oil on flange surfaces.

To disassemble the driven pulley, jackshaft must be removed. Remove screw (1—Fig. SP1-3), washers and snap ring from jackshaft bearing next to chain sprocket. Move belt off driven pulley and remove jackshaft assembly.

To disassemble driven pulley, loosen left hand threaded nut (18) enough to allow ramps of cam block (9) and movable flange (12) to slip past each other and allow spring (11) to unwind. Remove nut when spring pressure is released and separate components. Inspect parts for wear or damage. Cam buttons (10) should be renewed if worn

to a height of less than 1/8-inch from surface of ramp on cam block (9).

When reassembling driven pulley, insert end of spring (11) in center hole of cam block (9), then assemble but do not tighten nut (18). Rotate cam block past one ramp of movable flange (12) so that tension is placed in spring (11). Tighten nut (18) to 50 Ft. Lbs. torque.



**Fig. SP1-3—View of torque converter and jackshaft components.**

1. Screw
2. Washer
3. Washer
4. Ball bearing
5. Key
6. Chain sprocket
7. Shaft
8. Key
9. Cam block
10. Buttons
11. Spring
12. Flange
13. Bearing
14. Spacer
15. Flange
16. Spacer
17. Lock washer
18. Nut
19. Ball bearing
20. Engine
21. Guard
22. Fixed flange
23. Bearing
24. Roller retainer
25. Belt
26. Drive spring
27. Movable flange
28. Drive cover
29. Screw