Connecting rod and crankshaft are not available separately. Complete unit can be removed after separating crankcase halves. When reassembling, vary the number and position of shims on ends of crankshaft to provide 0.005 in. end play and center the connecting rod in crankcase. After reassembling, measure the distance from one end of piston pin bushing in rod to side of cylinder bore in crankcase. Push connecting rod to other extreme of crankpin and measure from other side of piston pin bushing to cylinder bore. Difference of more than 1/64-inch indicates that connecting rod is not centered and must be corrected by changing position of crankshaft shims.

**CLUTCH AND GEAR BOX.** Refer to Figs. N1-5, N1-6 and N1-12 for views of clutch and gear box. Clutch spring adjusting nuts (3—Fig. N1-5 & N1-6) should be tightened until ends of studs are aligned with tops of nuts. If slippage occurs, nuts can be tightened increasing spring tension if all nuts are tightened evenly.

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**TRIUMPH**

NORTON TRIUMPH CORP.
2765 East Huntington Drive
Duarte, CA 91010

**TIGER CUB**

**MODEL**

T20

| Displacement—cc | 199 |
| Bore—mm | 58 |
| Stroke—mm | 64 |

**Spark plug type**

Champion L-7

**Electrode gap—mm**

| Inch | 0.020 |
| **Point gap—mm** | 0.35-0.40 |
| **Inch** | 0.014-0.016 |

**Valve clearance (cold)**

| Intake | See Text |
| Exhaust | See Text |

**Electrical system voltage**

6

**Battery terminal grounded**

Positive

**Tire size—front**

* *

**Rear**

19

**Inch**

3/4

**Number of speeds**

4

**Illustrations courtesy Norton Triumph Corp.**

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**MAINTENANCE**

**SPARK PLUG.** Recommended spark plug for normal use is Champion L-5, KLG F100 or Lodge HN3. A hotter plug such as Champion L-7, KLG F80 or Lodge HN can be used if normal plugs are easily fouled. Electrode gap should be 0.5 mm (0.020 inch).

**CARBURETOR.** Amal and Zenith carburetors are used. Refer to the following specification data:

**Amal 332 (Used on T20 and T20C models)**

Refer to Fig. TM1-1

1. Main jet (13) ............... 100
2. Pilot jet (6) ............... 20
3. Needle jet (11) ............... 0.068
4. Clip (4) in third groove from top of needle (5).

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**Amal 375 (Used on T20 models)**

Refer to Fig. TM1-2

1. Main jet (13) ............... 90
2. Pilot jet (6) ............... 25
3. Needle jet (11) ............... 0.106
4. Clip (4) in third groove from top of needle (5).

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**Amal 376 (Used on T20M models)**

Refer to Fig. TM1-2

1. Main jet (13) ............... 140
2. Pilot jet (6) ............... 20
3. Needle jet (11) ............... 0.106T
4. Clip (4) in second groove from top of needle (5).
IGNITION AND ELECTRICAL

Ignition breaker point gap at maximum opening should be 0.014-0.018 inch for all models. Refer to the appropriate following paragraph for ignition timing.

On early models, the ignition timer is driven by the oil pump drive shaft and protrudes up from the right side of engine as shown in Fig. TM1-5. Ignition timing is varied by rotating the timer housing after loosening the clamp screw (S—Fig. TM1-5). On T20S and T20T models with energy transfer ignition accurate breaker point gap and ignition timing is of utmost importance. The alternator rotor must also be correctly timed to the crankshaft keyway: Refer to Fig. TM1-6. Keyway No. 1 should be used for T20S with timing at 16 degrees BTDC. Keyway No. 2 should be used for T20T models with ignition timing at 8 degrees BTDC. Refer to the following static (engine not running) ignition timing specification data for models with ignition timer driven by the oil pump drive gear:

<table>
<thead>
<tr>
<th>Model</th>
<th>Crankshaft Position</th>
<th>Piston</th>
<th>Degrees BTDC BTDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>T20</td>
<td>(Before Serial)</td>
<td>No. 17388</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>(After Serial)</td>
<td>No. 17387</td>
<td>4</td>
</tr>
<tr>
<td>T20C</td>
<td></td>
<td>4</td>
<td>almost TDC</td>
</tr>
<tr>
<td>T20T</td>
<td></td>
<td>8</td>
<td>0.016 inch</td>
</tr>
<tr>
<td>T20S</td>
<td></td>
<td>16</td>
<td>0.060 inch</td>
</tr>
</tbody>
</table>

The alternator rotor (magnet) must also be correctly timed to the crankshaft. Keyway No. 1 (shown in Fig. TM1-6) should be used for all models except T20T trials.

VALVE SYSTEM. Inlet and exhaust valves are actuated by a camshaft located in right side of crankcase, via cam followers, push rods and rocker arms. Clearance between rocker arm and adjusting screw should be 0.010 in. (0.25mm) for all except models with sports type camshaft. Sports camshafts should have 0.002 in. (0.05mm) clearance for inlet valve; exhaust valve should have 0.004 in. (0.10mm) clearance. All models should be adjusted with engine cold and piston at exact TDC of compression stroke.
**Triumph Cub**

- 1. Backing plate
- 2. Hub and cushions (small)
- 3. Drive cover (large)
- 4. Spider
- 5. Lock washer
- 6. B-h
- 7. Driving cups
- 8. Spring sleeves
- 9. Ball bearings
- 10. Sprocket bearing cup
- 11. Sprocket and clutch drum
- 12. Steel sleeve
- 13. Friction disc
- 14. Pressure plate
- 15. Lock nut
- 16. Adjusting screw
- 17. Spring cups
- 18. Clutch springs
- 19. Spring adjusting nuts
- 20. Oil seal
- 21. Clutch release rod
- 22. Ball (8x8-in.)
- 23. Release lever
- 24. Release lever
- 25. Lever pivot

**LUBRICATION.** The engine uses a dry sump lubrication system. SAE 40 engine oil should be used above 90 degrees F., SAE 30 from 32 degrees to 90 degrees F. and SAE 20 below 32 degrees F. Engine oil should be drained and filled with new oil every 1500 miles.

The gear box contains ½-pint of SAE 30 oil and should be drained and refilled every 6000 miles. The primary chain case should be drained and refilled every 1000 miles with SAE 20W oil.

**CLUTCH.** The clutch, located on the left end of the transmission input shaft, is of the multiple disc wet type. Adjustment is accomplished as follows: Disconnect the cable from the hand lever, loosen locknut (15—Fig. TM1-10) and turn screw (18) in until resistance is felt (clutch lever on engine right side contacts side cover). Back screw (16) out ¼-turn and tighten locknut. Attach cable and turn cable adjuster to provide 1/16-in. (1.5mm) free play at hand lever (B—Fig. TM1-11).

**SUSPENSION.** The front suspension used on T20 and T20C models is shown in Fig. TM1-14. Capacity of each unit is 75cc (¾-pint). Unit is drained at stud (41) and refilled at plug (11). Oil should be drained and reserviced with SAW 30 oil every 5000 miles. Tube (10)

should be renewed, not straightened, if bent more than a total of 15/16 inch. Holes in bushing (12) should be aligned with holes in tube (10). Bearing is removed after drilling holes out with 5/32-in. (4mm) drill. Bushing (12) is locked in place by counter-sinking bushing around holes with a center punch. Springs (14) should be renewed if free length is less than 16¾ inches.
The front suspension used on T20S and T20T models is shown in Fig. TM1-15. Capacity of each unit is 150cc (54-pint). Unit is drained at plug (19) and refilled at cap nut (28). Oil should be drained and serviced with same grade of oil as used in engine at least every 5000 miles. Tube (27) should be renewed, not straightened, if bent more than a total of 3/16-inch. Springs (31) should be renewed if free length is less than 17 1/4 inches.

The front suspension used on T20M and T20S/H is shown in Fig. TM1-16. Capacity of each unit is 200cc (54-pint). Unit is drained at plug (19) and refilled at cap nut (28). Oil should be drained and service with same grade of oil as used in engine every 6000 miles.

**REPAIRS CYLINDER HEAD AND VALVES.**

The cylinder head can be removed without removing engine from the frame. The rocker arms are removed after removing nuts (25—Fig. TM1-18) and carefully bumping rocker arm shafts (12) out toward left. NOTE: Use caution to prevent damage to threads on end of shafts.

When assembling, make certain that rocker arm washers are assembled as shown in Fig. TM1-18. The outside (right) cam follower is for the inlet (rear) rocker arm as shown in Fig. TM1-19. When installing the push rod tube and cylinder head, marks (M—Fig. TM1-20) should be aligned.

**PISTON, RINGS AND CYLINDER.**

The cylinder can be withdrawn from the four studs after removing the cylinder head. Cylinder bore taper or out of round should not exceed 0.005 inch. Piston ring end gap when checked at bottom of cylinder.

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Fig. TM1-18—Exploded view of the cylinder head. Inlet and exhaust valve springs are interchangeable.

1. Push rod tube lower seal
2. Push rod tube
3. Push rod
4. Push rod tube upper seal
5. Copper washer (6/16-inch)
6. Copper washer (5/8-inch)
7. Thrust washer (6-inch)
8. Exhaust rocker arm
9. Thrust washer (7/8-inch)
10. Spring washer
11. "O" ring seal
12. Rocker arm shaft
13. Rocker arm pin
14. Adjusting screw
15. Inlet rocker arm
16. Valve keepers
17. Spring retainer
18. Garter spring
19. Inner spring
20. Spring seat
21. Snap ring
22. Valve guide
23. Exhaust valve
24. Inlet valve

Fig. TM1-19—The inlet cam follower is on outside, exhaust on inside as shown.

Fig. TM1-20—When installing the push rod tube, align marks (M).

Fig. TM1-22—Exploded view of the engine assembly used on early models. Late models are similar.
To remove the camshaft, the ignition breaker point stator plate, the ignition cam assembly and the right side outer cover, then remove the kick starter spring retainer and return spring. Remove the small plate (2—Fig. TM1-22) and withdraw shaft (3). Remove the attaching screws and withdraw the inner cover (4).

When installing the camshaft, timing marks should be aligned as shown in Fig. TM1-24.

**GEAR BOX.** The transmission gears and shafts can be disassembled after the engine is removed and the generator rotor, crankshaft primary drive sprocket, clutch assembly and primary drive chain are removed. Remove the ignition breaker point base plate, ignition cam assembly and the right side outer cover. Remove the kick starter spring retainer and spring. Remove the small plate (2—Fig. TM1-22) and withdraw shaft (3). The inner cover (4) can then be removed. Refer to Fig. TM1-25 for exploded view of transmission gears and shafts.