NORTON

MODEL	88	99	650	750‡	750, 850 Commando
Displacement—cc	497	597	646	745	828#
Bore—mm	66	68	68	73	77#
Stroke—mm	72.6	82	89	89	89
Number of cylinders	2	2	2	2	2
Ignition—					
Spark plug type—Champion	N-4	N-4	N-4	N-7Y	N-7Y
Electrode gap—mm	0.45-0.50	0.45-0.50	0.45-0.50	0.45-0.50	0.59-0.72
Inch	0.018-0.020	0.018-0.020	0.018-0.020	0.018-0.0020	0.023-0.028
Point gap	Refer to text	Refer to text	Refer to text	Refer to text	Refer to text
Valve clearance (cold)					
Intake—mm	0.08	0.08	0.15	0.15	0.15†
Inch	0.003	0.003	0.006	0.006	0.006†
Exhaust—mm	0.13	0.13	0.2	0.2	0.2†
Inch	0.005	0.005	0.008	0.008	0.008†
Battery terminal grounded	Positive	Positive	Positive	Positive	Positive
Tire size—front	3.00 x 19	3.00 x 19	3.25 x 19	3.25 x 19	4.10 x 19**
Rear	3.50 x 19	3.50 x 19	3.50 x 19*	4.00 x 18	4.10 x 19**
Tire pressure—					
Front—kg/cm²	1.75	1.75	1.68	1.68	1.82
Psi	25	25	24	24	26
Rear—kg/cm²	1.54	1.54	1.4	1.4	1.82
Psi	22	22	20	20	26
Rear chain free play—mm	19-25	19-25	19-25	19-25	19-25
Inch	¾-1	¾-1	¾-1	¾-1	¾-1
Number of speeds	4	4	4	4	4

‡Includes Matchless G15 models
750 Commando displacement—745cc; bore—73mm
†Valve clearances for Combat models are: inlet—0.2mm (0.008 in.); exhaust—0.25mm (0.10 in.)
*May be 4.00 x 18.
**Early models same as model 99.
Illustrations courtesy of Norton Triumph Corp.

MAINTENANCE

SPARK PLUG. Recommended spark plug for models with 745 or 828cc displacement is Champion N-7Y. Recommended spark plug for all other models is Champion N-4. Electrode gap should be 0.59-0.72mm (0.023-0.028 in.) for Commando models and 0.45-0.050mm (0.018-0.020 in.) for all other models.

CARBURETOR. Amal carburetors are used on all models. Refer to Fig. N2-1 or Fig. N2-2 and the following specification data. Suggested main jet sizes are minimum and should be one or two sizes larger for high speed operation.

Model 88
Fig. N2-1
Carburetor model 376
Main jet (13) 240
Pilot jet (6) 30
Needle jet (11) 106
Clip (4) in second groove from top of needle (5).

Model 99
Fig. N2-1
Carburetor model 376
Main jet (13) 250
Pilot jet (6) 25
Needle jet (11) 106
Clip (4) in third groove from top of needle (5).

Model 650 (Single Carburetor)
Fig. N2-1
Carburetor model 389
Main jet (13) 320
Pilot jet (6) 25
Needle jet (11) 105
Clip (4) in second groove from top of needle (5).

Model 650 (Dual Carburetors)
Fig. N2-1
Carburetor model 376
Main jet (13) 250
Pilot jet (6) 25
Needle jet (11) 106
Clip (4) in third groove from top of needle (5).

Model 750 (With Amal 389 carburetors)
Fig. N2-1
Carburetor model—
Left side 389/87
Right side 389/88
Main jet (13) 350
Pilot jet (6) 20
Needle jet (11) 106
Clip (4) in third groove from top of needle (5).

Model 750 (With Amal 376 carburetors)
Fig. N2-1
Carburetor model 376/294
Main jet (13) 400
Pilot jet (6) 20
Needle jet (11) 106
Clip (4) in fourth groove from top of needle (5).

Commando 750 (With Amal 930 carburetors)
Fig. N2-2
Carburetor model—
Left side 930/27
Right side 930/26
Main jet (13) 220
Pilot jet (6) 25
Needle jet (11) 107
Clip (4) in third groove from top of needle (5). Needle jet size is 106 on models after 1970.

Commando 750 & 850 (With Amal 932 carburetors)
Fig. N2-2
Main jet (13) 260
Needle jet (11) 106
Jet needle (5) 928/104
Throttle valve 3.5
Clip (4) in top groove of needle (5).

Commando 750 Combat
Fig. N2-2
Main jet (13) 230
Needle jet (11) 106
Throttle valve (3) 3
Clip (4) in middle groove of needle (5).

On all models, idle mixture is adjusted at screw (1—Fig. N2-1 or Fig. N2-2) and idle speed at screw (7). On

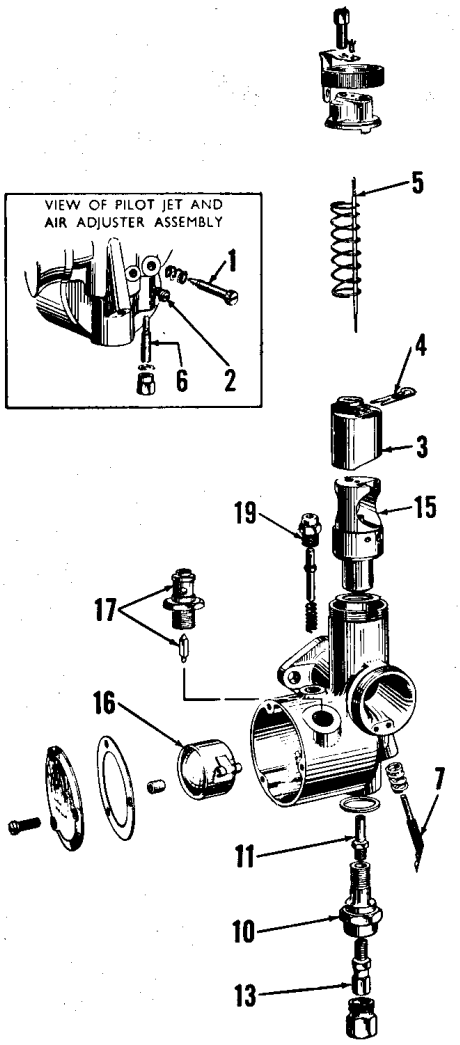


Fig. N2-1–Exploded view of typical Amal Monobloc carburetor.

1. Pilot air screw
2. Jet block screw
3. Throttle slide
4. Clip
5. Valve needle
6. Pilot jet
7. Idle speed screw
10. Jet holder
11. Needle jet
13. Main jet
15. Jet block
16. Float
17. Inlet valve
19. Primer

models with dual carburetors, the carburetors must be synchronized to begin opening at the same time by adjusting the cable guides at top of each carburetor. Idle mixture on one carburetor is more easily adjusted after disconnecting the spark plug wire from the other cylinder.

IGNITION AND ELECTRICAL. Ignition point gap should be 0.3-0.38mm (0.012-0.015 in.) for magneto and 0.35-0.40mm (0.014-0.016 in.) for battery ignition. Fully advanced timing for Commando models is 28 degrees BTDC, 30 degrees BTDC for model 88, 32 degrees BTDC for all other models. If ignition timing is checked statically, governor weights should be wedged to the advance position while timing. A degree plate must be used to check timing on all models except Commando models. Commando models are equipped with a TDC mark on the alternator rotor and a degree plate on the primary chain case cover.

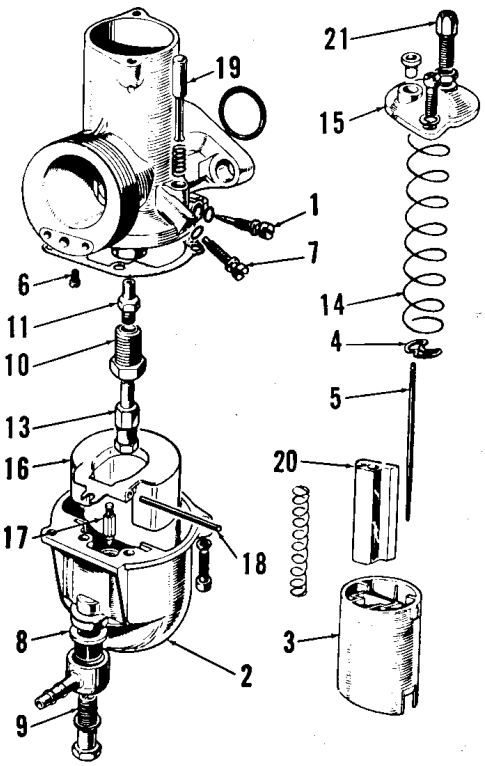


Fig. N2-2–Exploded view of Amal carburetor with concentric float.

1. Pilot air screw
2. Float bowl
3. Throttle slide
4. Clip
5. Valve needle
6. Pilot jet
7. Idle speed screw
8. Fuel filter
9. Banjo bolt
10. Jet holder
11. Needle jet
13. Main jet
14. Throttle spring
15. Top cover
16. Float
17. Inlet valve
18. Float pivot
19. Primer
20. Choke slide
21. Cable guide

Refer to Fig. N2-3. The alternator rotor on some Commando models may have two marks 180 degrees apart. The engine will run when timed to one mark but not when timed to the other mark. Before adjusting ignition timing, identify each breaker point set according to which cylinder it fires. Loosen screws (D—Fig. N2-4) and turn eccentric screw (B) for each breaker point set to adjust ignition timing for each cylinder. Loosen breaker plate retaining screws (A) and rotate breaker plate if a greater range of ignition timing adjustment is needed. Note that moving breaker plate will affect ignition timing of both cylinders.

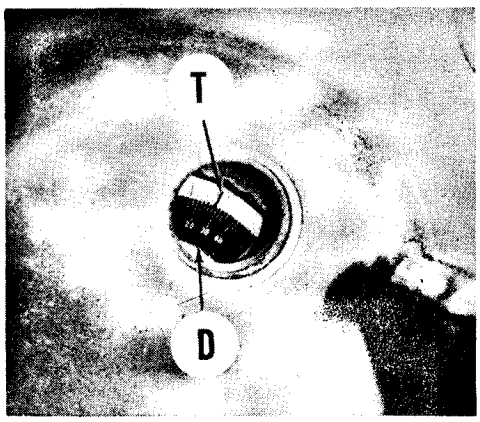


Fig. N2-3–View of degree plate (D) and TDC mark (T) on rotor of Commando models.

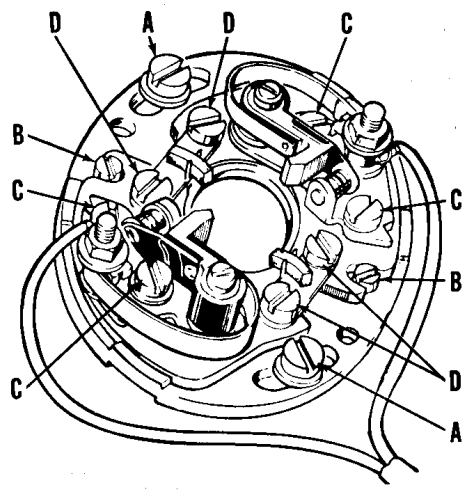


Fig. N2-4–View of later type ignition breaker point assembly. Earlier models are similar. Loosen screws (C) to adjust breaker point gap.

A. Breaker plate screws
B. Eccentric screws
C. Breaker point screws
D. Breaker point plate screws

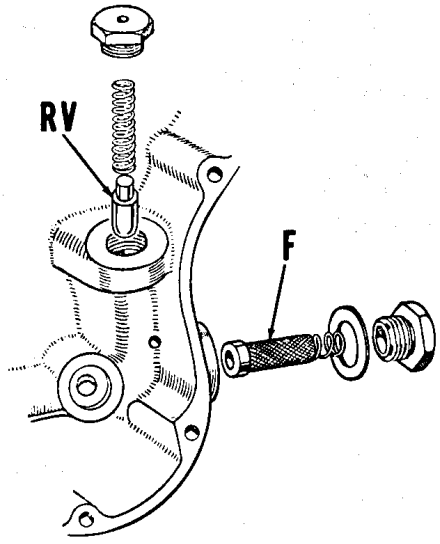


Fig. N2-5–View of oil pressure relief valve (RV) and engine oil filter (F) used on model 650ss. Filter can be removed without removing timing cover; relief valve can be removed after removing timing cover.

VALVE SYSTEM. Inlet and exhaust valves are actuated by a camshaft located in the crankcase via cam followers, push rods and rocker arms. Refer to specifications at beginning of this section for valve clearances. When setting valve clearance, engine should be cold and the similar valve for opposite cylinder should be at maximum opening.

LUBRICATION. The engine is lubricated by SAE 50 engine oil (above 90 degrees F.); SAE 20W/50 (32-90 degrees F.) and SAE 20 (below 32 degrees F.). Engine oil must be graded SD or SE. The gear box is lubricated with EP90 gear oil. Oil level in gearbox should be maintained at level of plug (6—Fig. N2-19) on rear of gearbox cover.

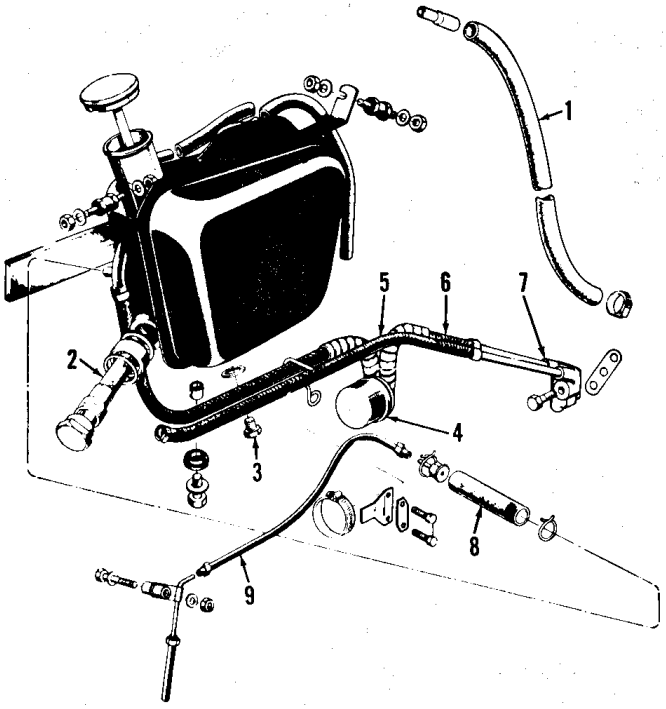


Fig. N2-5A–Typical view of oil tank, oil lines and rear chain oiler.

1. Breather tube
2. Filter
3. Drain plug
4. Oil filter
5. Oil feed tube
6. Oil return tube
7. Oil manifold
8. Chain oiler felt
9. Rear chain oiler tube

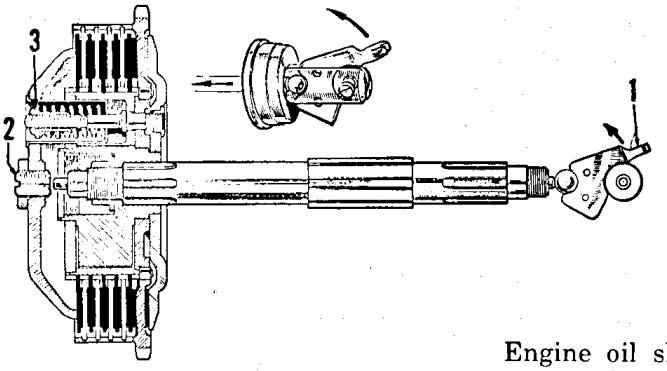


Fig. N2-6–Cross sectional view of the transmission input shaft and clutch assembly.

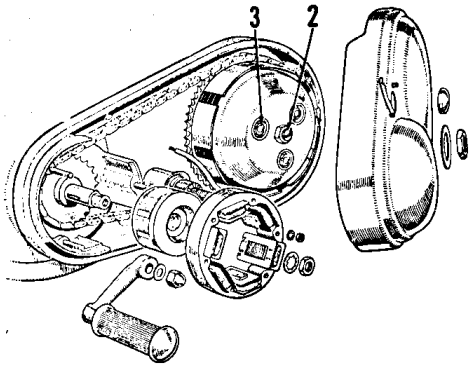


Fig. N2-7–The clutch adjusting screw located under the primary chain cover on early models is shown at (2).

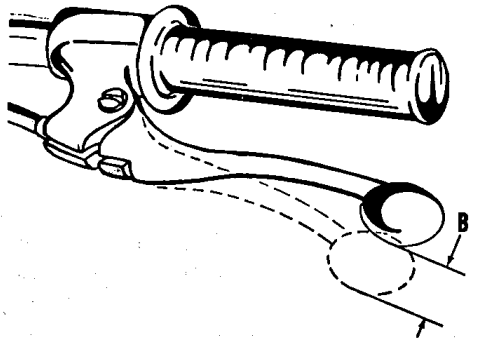


Fig. N2-8–Cable should be adjusted to provide ⅛ in. free play at B.

Engine oil should be changed every 3000 miles and gearbox every 6000 miles. Engine oil should be used in primary chaincase and maintained at level of plug (29—Fig. N2-18).

All models are equipped with an oil pressure relief valve to prevent excessive engine oil pressure. Relief valve is located at rear of timing cover as shown in Fig. N2-14 on all models except model 650 SS which has relief valve located on inside of timing cover as shown in Fig. N2-5.

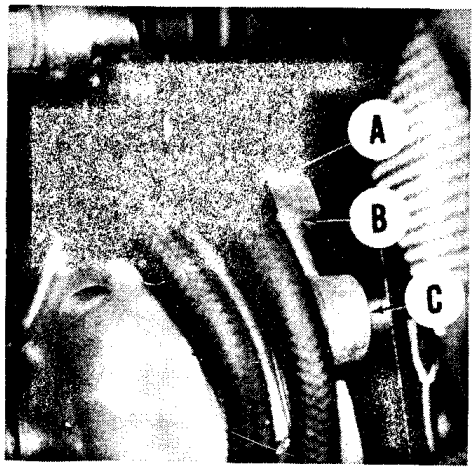


Fig. N2-9–Primary chain adjustment is accomplished by turning loosening bolt (C) and turning nuts (A & B).

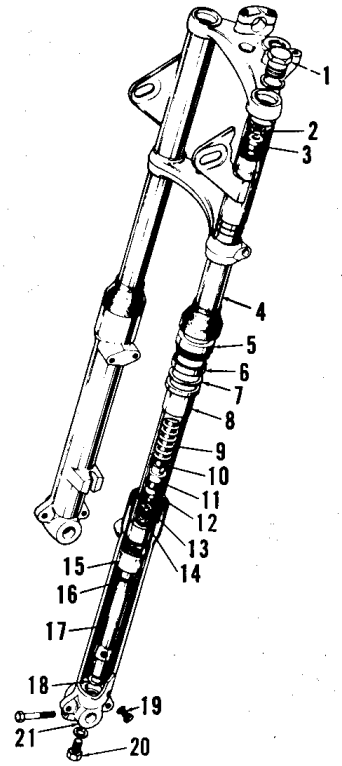


Fig. N2-10–Exploded view of front suspension used on later model Commandos.

1. Fill plug
2. Damper rod nut
3. Spring seat
4. Inner fork tube
5. Nut
6. Oil seal
7. Washer
8. Bushing
9. Spring
10. Damper rod
11. Damper tube cap
12. Damper rod valve
13. Valve seat
14. Nut
15. Bushing
16. Snap ring
17. Damper tube
18. Washer
19. Drain screw
20. Damper tube bolt
21. Outer fork tube

CLUTCH CONTROLS. Commando clutch lever should have 3/16-1/4 inch free play in cable. To adjust push rod in clutch, remove adjustment plug on chaincase and turn adjustment screw until slight amount of play is evident; then tighten lock nut and adjust cable for proper free play.

On other models the clutch operating lever (1—Fig. N2-6) located in the kick starter case, should have approximately ⅛-in. free play. If free play is incorrect, remove the primary chain cover, loosen locknut and turn the adjusting screw (2—Fig. N2-7). The cable should be adjusted to provide ⅛-in. free play at (B—Fig. N2-8).

PRIMARY CHAIN. The primary chain is adjusted to provide ½-¾ in. total up and down play of chain as follows: Loosen nuts (A & C—Fig. N2-9) and lower transmission bolt. Turn nut (B) until primary chain has correct free play. Retighten all nuts and adjust rear chain tension.

SUSPENSION. Each telescopic front suspension unit on Commando models contains 5½ fl. oz. (150cc) of SAE 20 motor oil. All other units contain 5 fl. oz. (142cc). Refer to Fig. N2-10 or N2-11 for exploded view of front suspension.

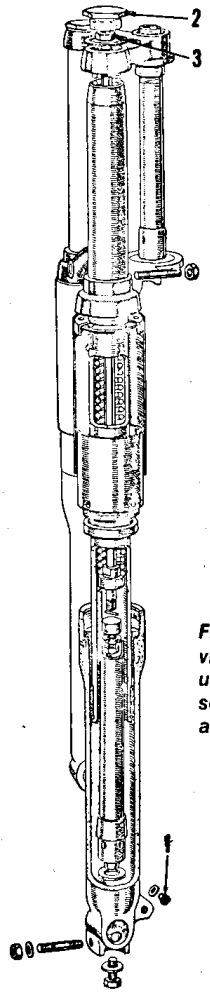


Fig. N2-11–Cross sectional view of front suspension unit used on early models. Drain screw is shown at 1. Plug (2) and nut (3) must be removed to service unit.

FRONT DISC BRAKE. Later Commando models are equipped with a hydraulically actuated front disc brake. Master cylinder and fluid reservior are located on handlebar adjacent to throttle.

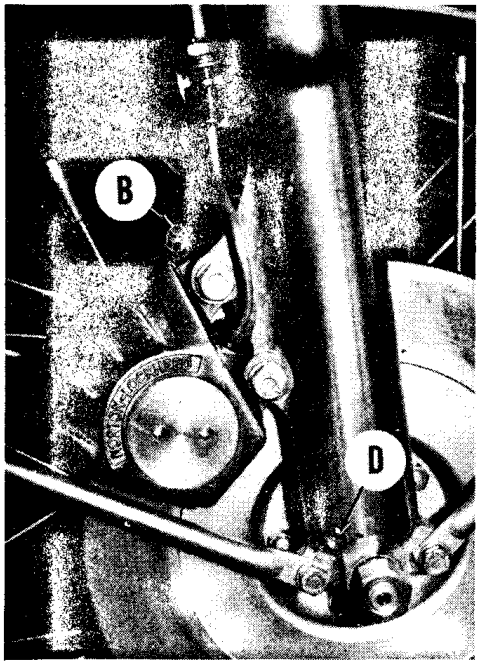
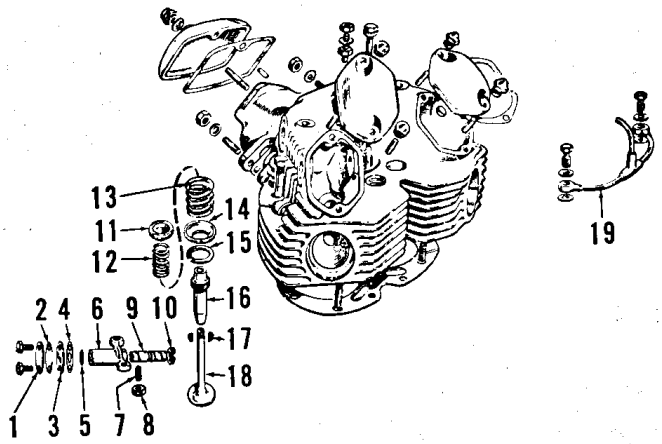


Fig. N2-11A–View of later Commando model fork leg showing location of brake bleeder valve (B) and fork drain screw (D).

Fig. N2-12–Exploded view of cylinder head assembly.

1. Rocker shaft retainer plate
2. Gasket
3. Rocker shaft locating plate
4. Gasket
5. Thrust washer
6. Rocker arm
7. Valve adjusting screw
8. Lock nut
9. Rocker shaft
10. Spring thrust washer
11. Spring retainer
12. Inner valve spring
13. Outer valve spring
14. Spring seat
15. Insulating washer
16. Valve guide
17. Valve retainers
18. Valve
19. Rocker assy. oil pipe



Hydraulic brake fluid in master cylinder must be maintained at ½-inch below top of reservoir. Recommended hydraulic fluid is Lockheed Series 329 Hydraulic Fluid. Do not allow brake fluid to contact painted areas of motorcycle as brake fluid will damage paint. Manufacturer recommends draining and refilling brake system every eighteen months or 24,000 miles, whichever occurs first.

Hydraulic brake system must be bled if air is trapped or brake fluid is contaminated. Attach one end of a hose to bleeder valve (B—Fig. N2-11A) and submerge other end of hose in brake fluid to prevent air from re-entering system. Keep reservoir on handle bar filled with brake fluid. Pull and hold brake lever in engaged position and loosen bleeder valve until brake fluid will flow out of valve. Tighten bleeder valve, then release brake lever. At first, bubbles (air) will be released from bleeder valve. Continue bleeding procedure until only fluid free from air bubbles is released from bleeder valve. Do not release brake lever when bleeder valve is open; do not permit reservoir to run dry while bleeding.

Brake adjustment is not required but fluid level in reservoir should be checked periodically.

REPAIRS

CYLINDER HEAD AND VALVES. To remove cylinder head, remove exhaust system, fuel tank, carburetors and spark plugs. Detach cylinder head bracket from head and frame. On some models it will be necessary to remove the rocker covers and/or the dual coil assembly. Detach oil feed lines to rocker box. Rotate engine until pistons are at top of cylinders and unscrew cylinder head bolts. Lift cylinder head and tilt it until push rods are accessible and then slide push rods up into head. While holding push rods in head, remove cylinder head from motorcylce. Refer to following specifications:

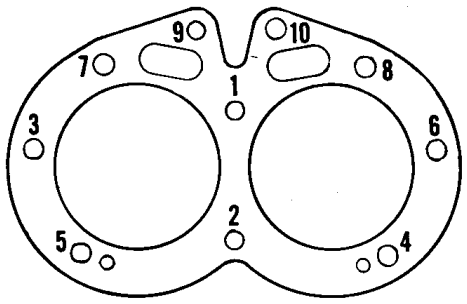


Fig. N2-13–Cylinder head bolt tightening sequence.

Rocker arm bushings	
I.D.	12.694-12.708mm 0.4998-0.5003 in.
Rocker shaft	
diameter	12.662-12.669mm 0.4985-0.4988 in.
Valve stem diameter	7.886-7.912mm 0.3105-0.3115 in.
Valve guide I.D.	7.963-7.988mm 0.3135-0.3145 in.
Inlet push rod length	
All except Commando	20.813cm 8.194 in.
Commando	20.650-20.742cm 8.130-8.166 in.
Exhaust push rod length	
All except Commando	18.672cm 7.351 in.
Commando	18.504-18.595cm 7.285-7.321 in.
Valve spring free length	
Inner	
Commando	37.642mm 1.482 in.
All other models	38.887mm 1.531 in.
Outer	
Commando	41.097mm 1.618 in.
All other models	43.180mm 1.700 in.

Valves guides are renewable and may be removed and installed after cylinder head is heated to 150-200° C (300-392° F.). Oversize valve guides are available. Heat insulator washers are used between spring seat and cylinder head on all valves of all models prior to 1972 but only on exhaust valves on

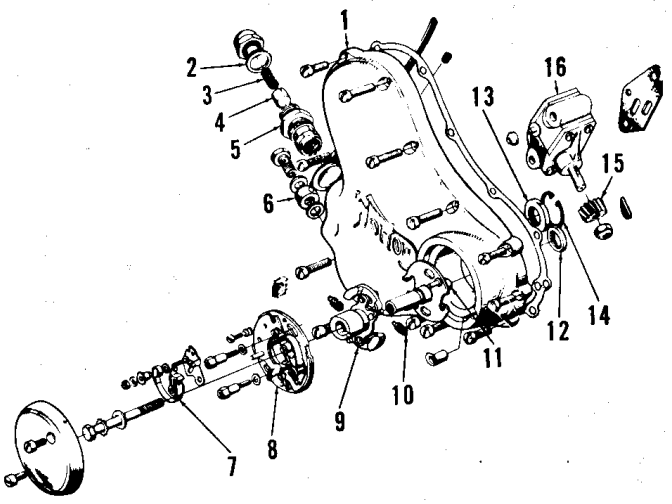


Fig. N2-14–Exploded view of components located in timing cover.

1. Timing cover
2. Washer
3. Oil pressure relief valve spring
4. Relief valve piston
5. Relief valve body
6. Rocker assy. oil pipe
7. Ignition breaker points
8. Breaker plate
9. Advance weights
10. Advance springs
11. Advance plate
12. Oil seal
13. Oil seal
14. Snap ring
15. Oil pump gear
16. Oil pump

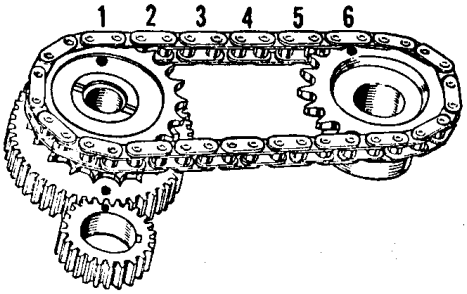


Fig. N2-16–View of timing marks on crankshaft gear, idler gear, sprocket and camshaft sprocket. Ignition timing chain and camshaft timing chain must be installed on idler gear sprockets and camshaft sprocket before installing gear and camshaft sprocket.

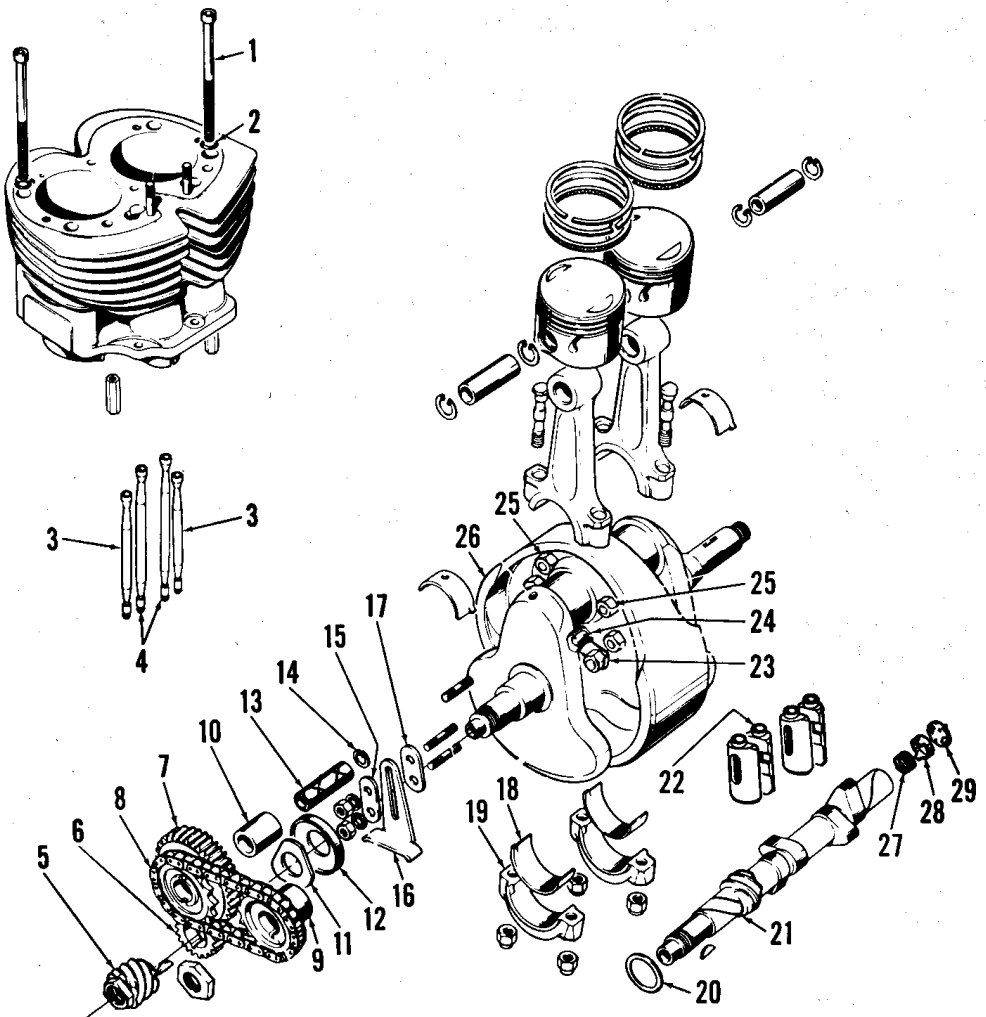


Fig. N2-15–Exploded view of typical engine assembly. Cylinder thru bolts (1) are only used on 850cc engines. Crankcase breather components (27, 28 & 29) are used on models prior to 1972.

1. Thru bolts (850)
2. Washer
3. Exhaust push rod
4. Inlet push rod
5. Oil pump worm
6. Crankshaft gear
7. Idler gear
8. Timing chain
9. Camshaft sprocket
10. Idler bushing
11. Washer
12. Oil seal
13. Idler shaft
14. Snap ring
15. Thick washer plate
16. Chain tensioner
17. Thin washer plate
18. Rod bearing
19. Rod cap
20. Thrust washer
21. Camshaft
22. Tappets
23. Lock plate
24. Dowel pin
25. Long nuts
26. Flywheel

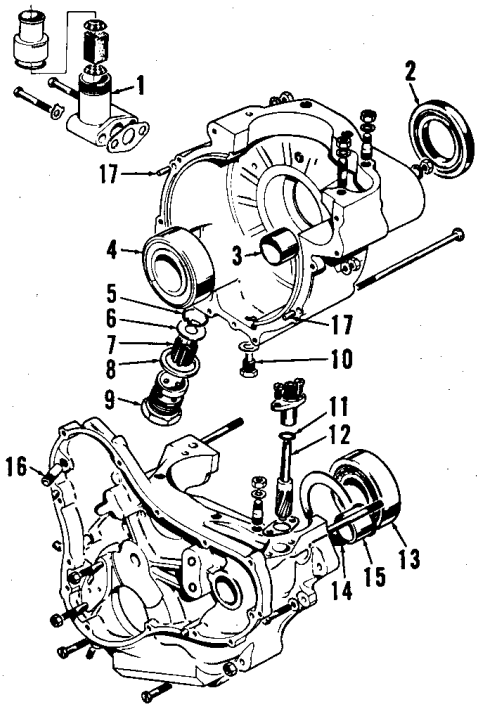


Fig. N2-17–Exploded view of crankcase assembly. Breather (1) is used on 1972 & 1973 750cc models. Breather tube (16) is used on all 850cc models.

1. Breather assy.
2. Oil seal
3. Camshaft bushing
4. Main bearing
5. Wire retainer
6. Washer
7. Filter
8. Washer
9. Sump filter body
10. Drain plug
11. "O" ring
12. Tachometer gear
13. Main bearing
14. Shim
15. Camshaft bushing
16. Breather tube
17. Dowel pin

models after 1971. Install rocker shafts and arms with slot in end of rocker shaft out. Install spring type thrust washers (10—Fig. N2-12) at inner ends of rocker arms and flat thrust washers (5) at outer ends of rocker arms. Slots in ends of rocker shafts must be aligned with tangs on shaft locking plates (3). Tighten 5/16-inch cylinder head bolts to 2.75 kg-m (20 ft.-lbs.) and ⅜-inch bolts and nuts to 4.15 kg-m (30 ft.-lbs.). Refer to Fig. N2-13 for tightening sequence. The inlet push rods are longer than exhaust.

PISTONS, RINGS AND CYLINDER. The cylinder can be removed without removing engine after removing the cylinder head. Engines with 850cc displacement have four cylinder thru-bolts in addition to cylinder base nuts. Standard cylinder bore diameter is 66mm (2.5984 in.) for model 88; 68mm (2.6780-2.6786 in.) for 99 and 650 models; 73mm (2.8750 in.) for 750 models; 77mm (3.032 in.) for 850 models. Ring clearance in groove should be 0.038-0.089mm (0.0015-0.0038 in.) Ring end gap should be 0.20-0.25mm (0.008-0.010 in.) for all models except 650 Manxman, 750 and 850 which should be 0.25-0.30mm (0.010-0.012 in.) in. The second (unplated) compression ring is tapered and should be installed with side marked "TOP" toward head of piston.

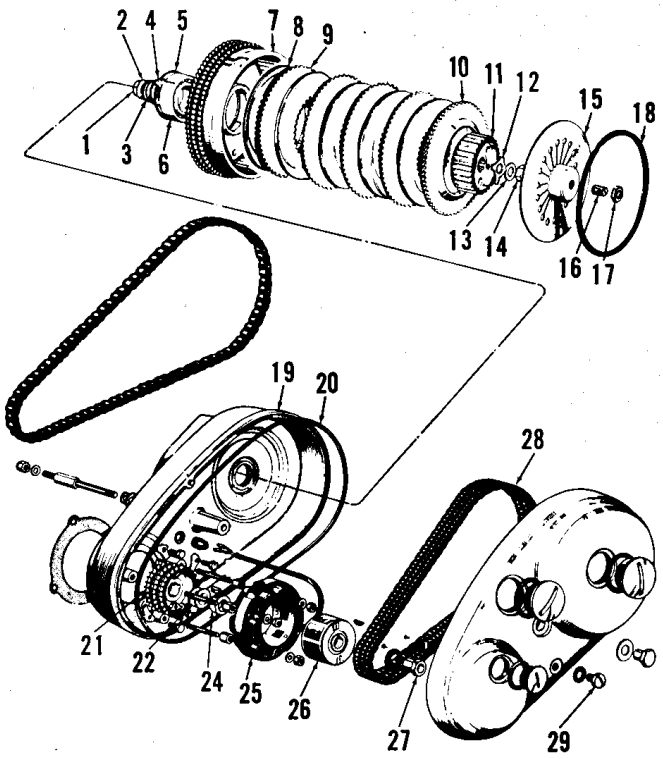


Fig. N2-18–Exploded view of clutch and primary drive assembly used on later models. Refer also to Fig. N2-6 or N2-7 for view of early model clutch. Install shims (3 & 4) as required for primary chain alignment.

1. Snap ring
2. Spacer
3. Shim (0.036 in.)
4. Shim (0.048 in.)
5. Snap ring
6. Bearing
7. Clutch drum
8. Friction plates (5)
9. Drive plates (4)
10. Pressure plate
11. Clutch hub
12. Tab washer
13. Washer
14. Nut
15. Spring plate
16. Adjusting screw
17. Lock nut
18. Snap ring
19. Inner chaincase
20. Rubber gasket
21. Primary drive sprocket
22. Shims
24. Spacer
25. Stator
26. Rotor
27. Rotor nut
28. Primary chain
29. Oil level plug

Some pistons are marked "RH" and "LH" to indicate in which cylinder piston is installed. Valve pocket in piston crown is marked "EX" on some models. Exhaust valve pocket is the closest pocket to the outer edge of the piston crown on models which do not have exhaust valve pocket marked. Pistons on 850cc engines do not have valve pockets and are interchangeable between cylinders. Oversize pistons and rings are available.

Piston pin is a light press fit in piston and rides directly in connecting rod small end. Piston pin hole diameter in piston and piston pin diameter should be 17.442-17.447mm (0.6867-0.6869 in.).

Tighten ⅜-inch cylinder base nuts to 345 kg-cm (300 in.-lbs.) and 5/16-inch cylinder base nuts to 275 kg-cm (240 in.-lbs.). Tighten cylinder thru bolts on 850cc models to 415 kg-cm (360 in.-lbs.).

CRANKSHAFT, CONNECTING RODS AND CAMSHAFT. Crankcase halves must be separated to remove crankshaft. Crankshaft on models prior to 1972 is supported at timing end by a ball bearing and at driving end by a roller bearing. Models after 1971 have roller bearings at both ends. Crankshaft main bearings should fit tightly in crankcase bores. Lockplate (23—Fig. N2-15) is installed on two studs nearest center of flywheel. Long nuts (25) are installed on two outermost studs or capscrews. Tighten crankshaft mating nuts in a diagonal pattern to 345 kg-cm (300 in.-lbs.). Crankshaft end play should be 0.127-0.381mm (0.005-0.015 in.).

Connecting rods have renewable insert type bearings which are available in undersizes. Crankshaft rod journal standard diameter is 44.45-44.46mm (1.7500-1.7505 in.). Manufacturer recommends a 2.3mm (0.090 in.) radius between rod journal and crank boss if rod journal is ground to an undersize. Tighten connecting rod nuts to 345 kg-cm (300 in.-lbs.) on Commando models and 195-207 kg-cm (170-180 in. lbs.) on all other models.

The camshaft is carried in two renewable bushings. Both bushings must be sized after installation to 22.225mm (0.8750 in.). Idler gear bushing must also be sized after installation to 14.274-14.292mm (0.5620-0.5627 in.). Install camshaft thrust washer (20—Fig. N2-15) with chamfer towards camshaft. Engines with serial numbers between 200000 and 300000 have an additional camshaft thrust washer which must be installed between the chamfered thrust washer and the crankcase with the tab inserted in the hole below the camshaft bushing.

Crankshaft timing gear should be installed on crankshaft with chamfered edge out. Turn crankshaft until marked tooth on crankshaft gear is at TDC. Turn camshaft until keyway is at

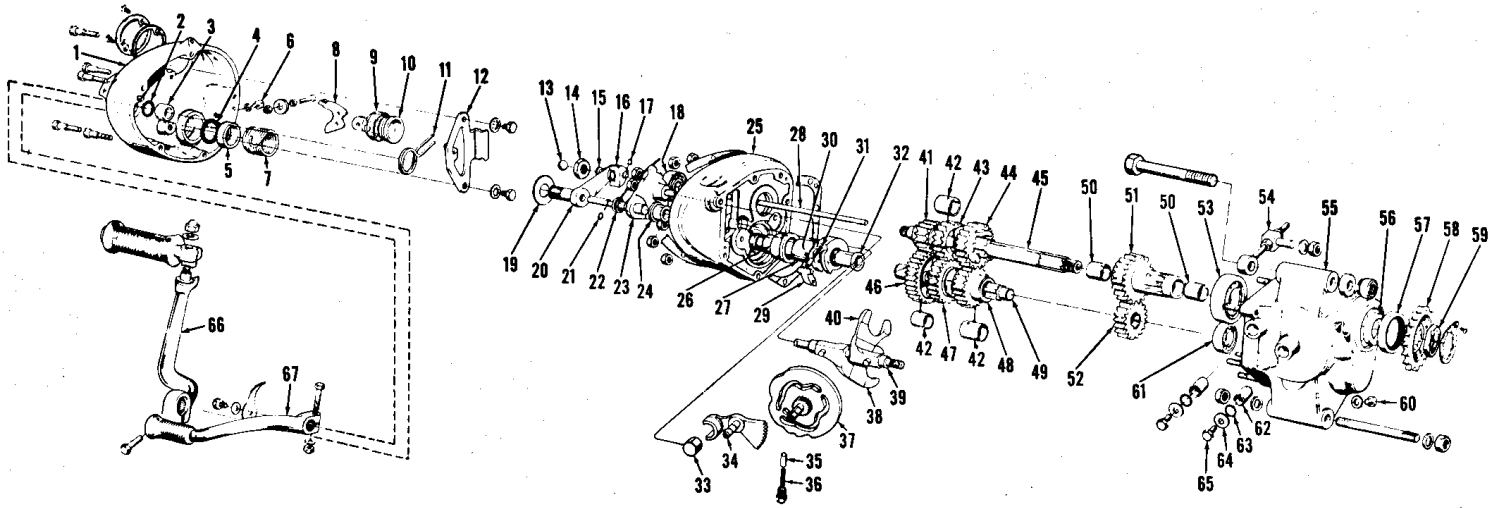


Fig. N2-19–Exploded view of transmission.

1. Outer cover
2. "O" ring
3. Bushing
4. "O" ring
5. Bushing
6. Oil level plug
7. Kick starter spring
8. Clutch lever
9. Lock ring
10. Lever body
11. Gearshift return spring
12. Stop plate
13. Clutch ball
14. Nut
15. Gearshift pawl pin
16. Gearshift pawl
17. Wire retainer
18. Bearing
19. Spring washer
20. Gearshift
21. "O" ring
22. Ratchet spring
23. Shift ratchet
24. Bushing
25. Inner cover
26. Bushing
27. Kick starter shaft
28. Clutch pushrod
29. Kick starter pawl
30. Pawl plunger
31. Spring
32. Bushing
33. Shift quadrant roller
34. Shift quadrant
35. Cam plunger
36. Spring
37. Shift cam
38. Shift fork (1st & 3rd)
39. Shaft
40. Shift fork (2nd & 4th)
41. Mainshaft 1st gear
42. Bushing
43. Mainshaft 2nd gear
44. Sliding gear (2nd & 4th)
45. Mainshaft
46. Countershaft 1st gear
47. Sliding gear (1st & 3rd)
48. Countershaft 3rd gear
49. Countershaft
50. Bushing
51. Mainshaft 4th gear
52. Countershaft gear
53. Bearing
54. Primary chain adjuster
55. Transmission case
56. Spacer
57. Oil seal
58. Sprocket
59. Nut
60. Drain plug
61. Bearing
62. Bushing
63. "O" ring
64. Washer
65. Capscrew
66. Kick starter lever
67. Gearshift lever

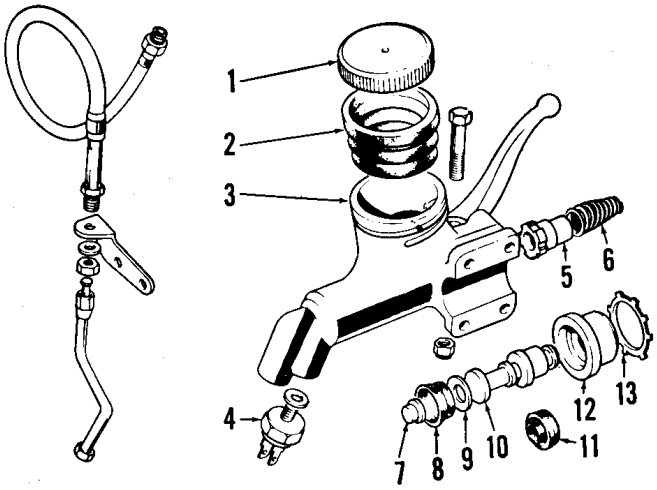
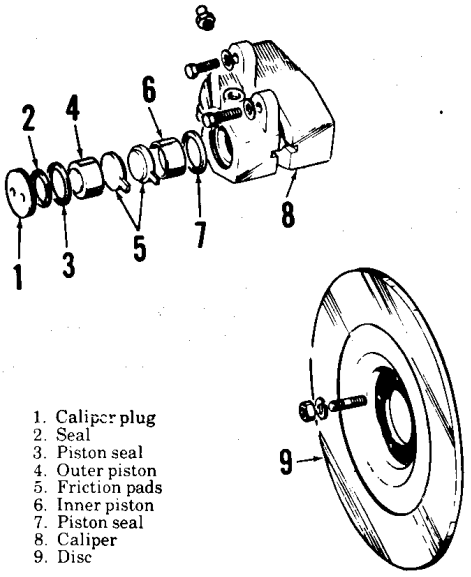


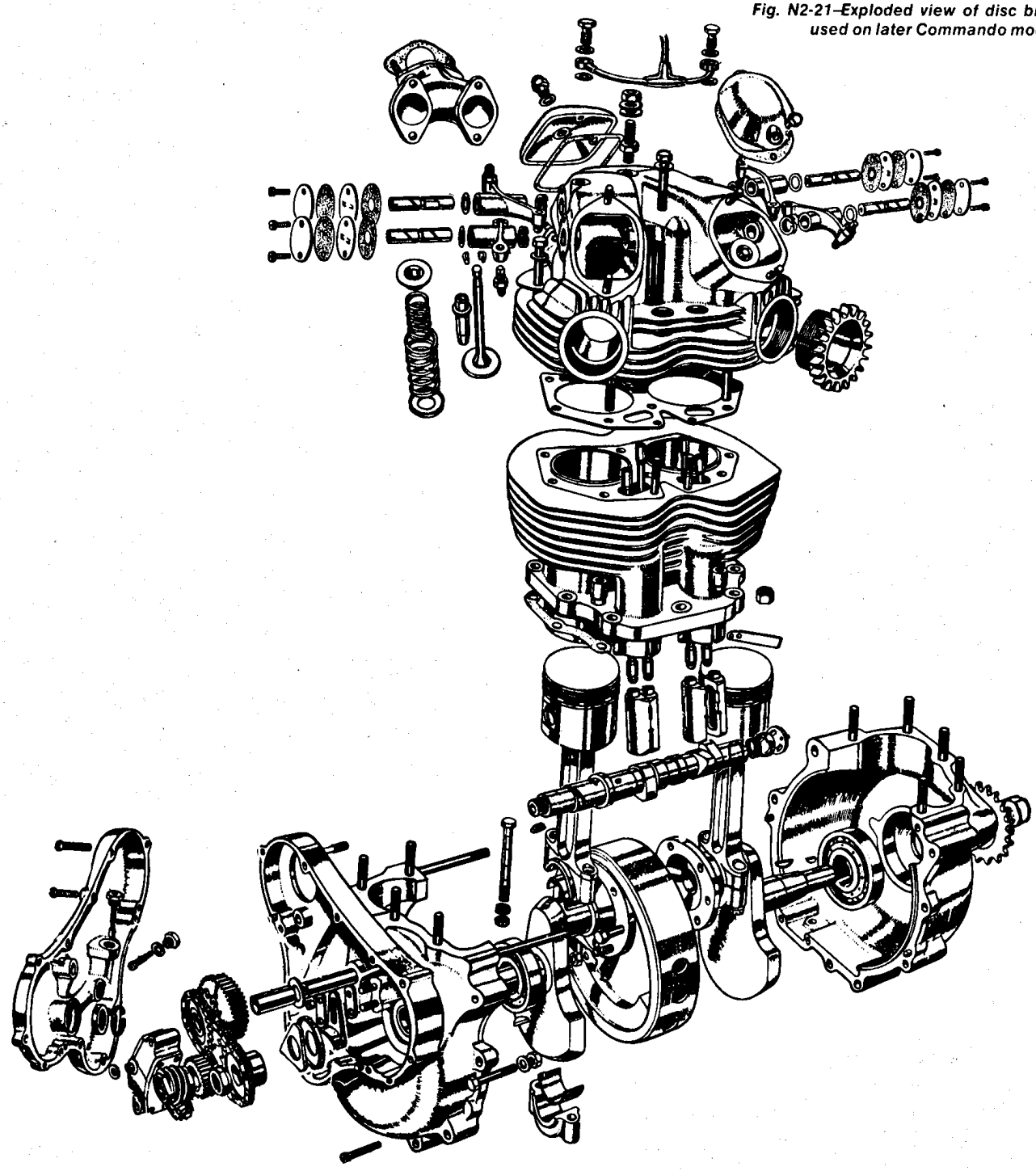
Fig. N2-20–Exploded view of hydraulic brake master cylinder used on later Commando models.

1. Reservoir cap
2. Bellows
3. Master cylinder & reservoir
4. Brake light switch
5. Valve
6. Spring
7. Spreader
8. Primary cup
9. Cup washer
10. Piston
11. Secondary cup
12. Boot
13. Retainer



1. Caliper plug
2. Seal
3. Piston seal
4. Outer piston
5. Friction pads
6. Inner piston
7. Piston seal
8. Caliper
9. Disc

Fig. N2-21–Exploded view of disc brake caliper used on later Commando models.



TDC. Install ignition and camshaft drive chains on idler gear sprockets. Insert camshaft sprocket into driving chain with marked tooth aligned with the sixth outside chain plate from marked tooth on idler gear sprocket. Refer to Fig. N2-16 which shows timing marks correctly aligned. With ignition and camshaft drive chains installed on sprockets and timing marks properly aligned, install idler gear and camshaft sprocket on shafts. The camshaft sprocket (9—Fig. N2-15) is locked onto shaft with a nut, and crankshaft gear on crankshaft with oil pump drive worm (4). The oil pump drive worm is LEFT hand thread.

Install chain tensioner (16) with thinner clamp plate (17) toward crankcase and long end down. The thicker clamp plate is installed long end up. Camshaft chain should have 4.8mm (3/16-in.) total up and down play midway between sprockets. It is possible to move ignition sprocket in its chain to provide correct primary ignition timing.

CLUTCH AND GEAR BOX. Refer to Figs. N2-18 and N2-19 for views of clutch and gear box. Clutch spring adjusting nuts (3—Fig. N2-6 & N2-7) on early models 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.

DISC BRAKE. The front wheel must be removed before the front disc brake pads can be removed. Minimum acceptable pad thickness is 1.5875mm (0.0625 in.) and minimum disc thickness is 6.604-6.635mm (0.25-0.26 in.). Piston faces and inner surfaces of brake pads should be lightly coated with disc brake lubricant. Remove fluid reservoir cap and bellows and note level of brake fluid when installing brake pads in brake caliper.

To disassemble caliper unit, disconnect and cap hydraulic line to caliper. Unscrew caliper mounting bolts and separate caliper from fork leg. Remove friction pads and then using a suitable clamp hold the outer piston (4—Fig. N2-21) in the caliper. Direct an air pressure hose into the hydraulic fluid line hole or reconnect fluid line to caliper and force inner piston (6) into friction pad cavity with compressed air or by squeezing the handlebar brake lever. Note: If piston is seized in bore, manufacturer recommends installation of a new caliper unit. Release outer piston clamp and unscrew caliper plug (1). Remove outer piston. It may be necessary to clean piston bore with alcohol before removing piston. Remove piston seal and then remove inner piston through outer piston bore. Clean components with alcohol or clean brake fluid. Renew caliper and/or pistons if damaged, scratched or corroded.

To service the brake master cylinder, remove master cylinder and drain brake fluid. Remove brake light switch, boot and hand lever. Remove retainer (13—Fig. N2-20) and withdraw boot (12) along with piston assembly. Gently tap or bump housing if components remain in cylinder. Clean components with alcohol and inspect for damage or corrosion. Soak primary and secondary cups in brake fluid for approximately fifteen minutes before installation and lubricate all components with brake fluid before assembly.

Brake system must be bled as outlined in MAINTENANCE section after either the brake caliper or master cylinder has been overhauled.