

# NORTON COMMANDO TORQUE SETTINGS

The torque values below come from the Norton Workshop manuals, information on the Old Britts website, a table provided in an Andover Norton [The Source](#) newsletter, recommendations from members of the Access Norton Forum (<https://www.accessnorton.com>) and personal experience.

The cylinder and head graphics are courtesy Grant Tiller (<https://granttiller.com/>).

What is listed is what I use – if it conflicts with the workshop manual or others, I explain. No, I don't use a torque wrench on everything listed, but I have experimented and know how tight I'm getting things.

Foot Pounds	Inch Pounds	Foot Pounds	Inch Pounds
1	12	11	132
2	24	12	144
3	36	13	156
4	48	14	168
5	60	15	180
6	72	16	192
7	84	17	204
8	96	18	216
9	108	19	228
10	120	20	240

## NOTES:

- Lubrication makes bolts easier to turn and therefore lower torque should be used.
- Anytime you are threading a stainless steel nut on to a stainless steel bolt, it is good practice to put a dab of anti-seize on the threads. Stainless has a tendency to work harden and “weld” itself together.
- Plated Steel or Stainless Steel screws in aluminum casings require great care if fine thread. 5 ft-lb. with anti-seize is fine with course threads but is probably too much with fine threads like those used for the gearbox. I always use anti-seize on Stainless into aluminum but only 4ft-lb (48 in-lb.) for fine threads.

## GENERAL:

There is a table in the MK3 Workshop Manual called “General Guidance Table – Torque Recommendations” that provides much more info. The plating, thread pitch, hardness, lubrication and other factors matter. These values for plated, unlubricated UNF fasteners are from that table:

- 1/4" Bolt 8 ft-lb.
- 5/16" Bolt 15 ft-lb.
- 3/8" Bolt 25 ft-lb.
- 7/16" Bolt 40 ft-lb.
- 1/2" Bolt 60 ft-lb.
- 9/16" Bolt 80 ft-lb.

## **ENGINE:**

- Crankcase top front nut (1/4" stud) 72 in-lb
- Crankcase top rear nut (3/8" stud) 25 ft-lb.
- Crankcase bottom screws (1/4" x 20 x 1-1/4 – I use stainless steel socket cap screws, anti-seize, and 72 in-lb.
- Crankcase front short bolt/nut (5/16") 15 ft-lb.
- Front ISO to Crankcase Mounting Bolts (3.8 in., 4-1/8 in., 2 bolts, 06.3213) 25 ft-lb.
- Cradle to Crankcase Mounting Bolts (3.8 in., 4-1/4 in., 2 bolts, 06.3212) 25 ft-lb.
- Cradle to Crankcase Mounting Bolt (5/16 in., 4-1/4 in., 1 bolt, 06.3212) 15 ft-lb.
- Crankcase bolt (5/16 in., 1 bolt) 15 ft-lb.
- Cylinder head nuts (3/8 in., 8 nuts) 30 ft-lb. See tightening order below
- Cylinder head nuts (5/16 in., 2 nuts) 20 ft-lb. See tightening order below
- 750 Cylinder base nuts (3/8 in., 6 nuts) 25 ft-lb. See tightening order below
- 750 Cylinder base nuts (5/16 in, 3 nuts) 20 ft-lb. See tightening order below
- 850 Cylinder base nuts (3/8 in, 1 nut) 25 ft-lb. See tightening order below
- 850 Cylinder base nuts (5/16 in, 4 nuts) 20 ft-lb. See tightening order below
- 850 Cylinder barrel Allen bolts (4 bolts, 06-3085, through cylinder) 30 ft-lb.
- Crankshaft stud nuts
  - Pre-MK3 (12 nuts) 30 ft-lb.
  - MK3 (14 nuts) 30 ft-lb.
- Connecting rod nuts (4 nuts, 06-7827) 25 ft-lb. Note: I've seen lots of different recommendations on the Internet for these, but every workshop manual agrees with me. It's fine to reuse the bolts, new nuts are required every time, the threads must be clean and dry, do not peen the nuts.
- Rocker spindle cover plate bolts (8 bolts) 8 ft-lb.
- Spark plug 15 ft-lb.

## Cylinder Head Tightening Order:

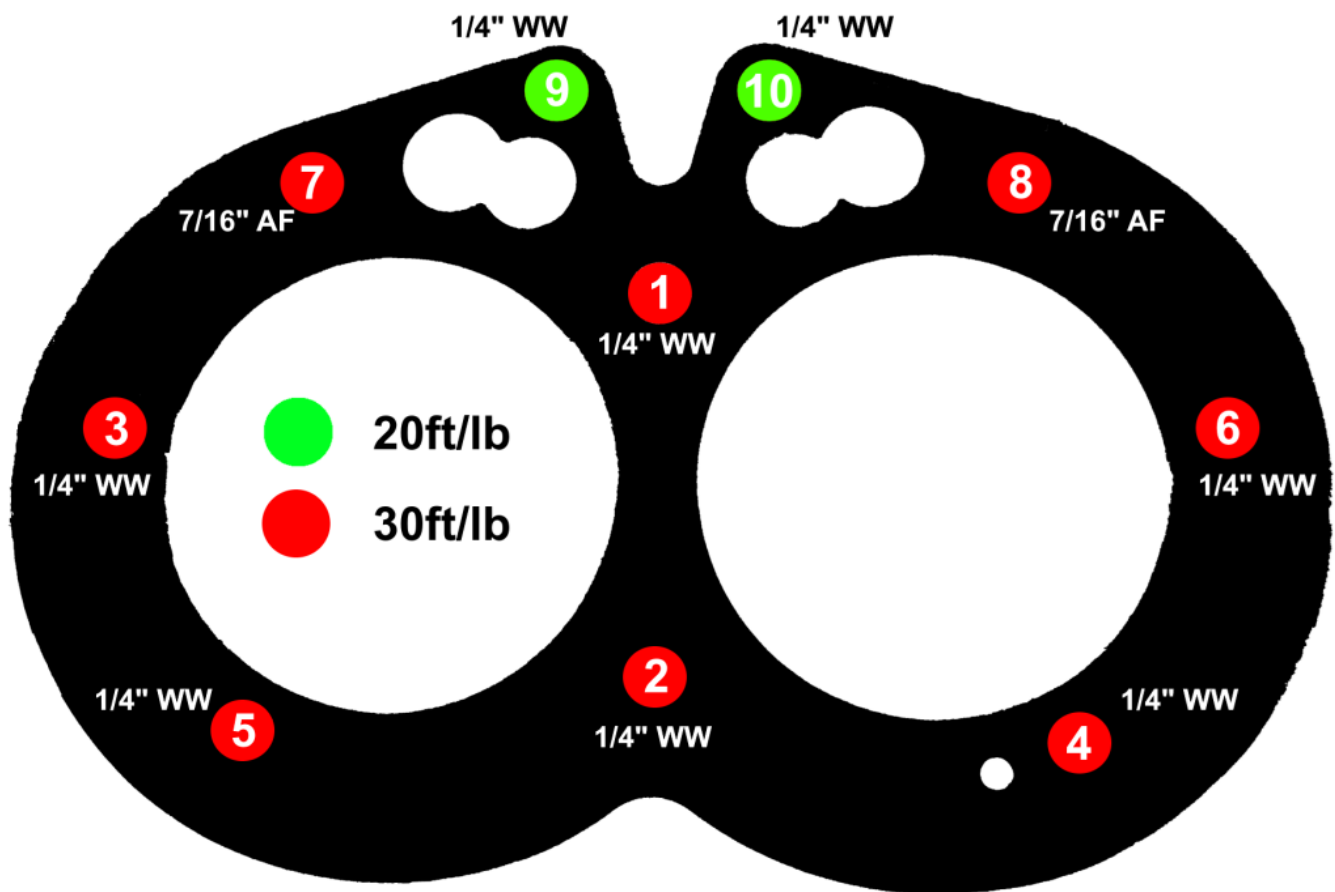
The graphic shows the tightening order (numbers), torque (colors), and wrench sizes. I Start at 10 ft-lb and follow the sequence, then 15 ft-lb, and follow the sequence, and then the final torque and follow the sequence.

Note 1: Norton Service Bulletin [N3/68](#) states that for the 750 Commando the 3/8" bolt/stud torque should be increased to 35 ft-lb and the 5/16" bolts should be increased to 25 ft-lb. However, the 850 workshop manuals all still say 30 ft-lb and 20 ft-lb.

Note 2: If you're using the head fastening kit from cNw the smaller nuts/bolts torque value is 25 ft-lb and the large are 35 ft-lb and 12-point sockets and wrenches are needed. The procedure and tightening order are the same.

Note 3: Here and in the next several pages, WW = Whitworth wrench of the size indicated. It does not indicate the thread pattern – British threads generally go by the diameter of the bolt and not the head size. Most British threads in a Norton are BSF/CEI or BSC, not BSW (Whitworth). AF = Across flats. In other words 7/16" AF simply means a 7/16" (SAE) wrench which is usually a UNF or UNC thread. In this case the wrench to use is a SAE 7/16" but the studs are BSF/CEI.

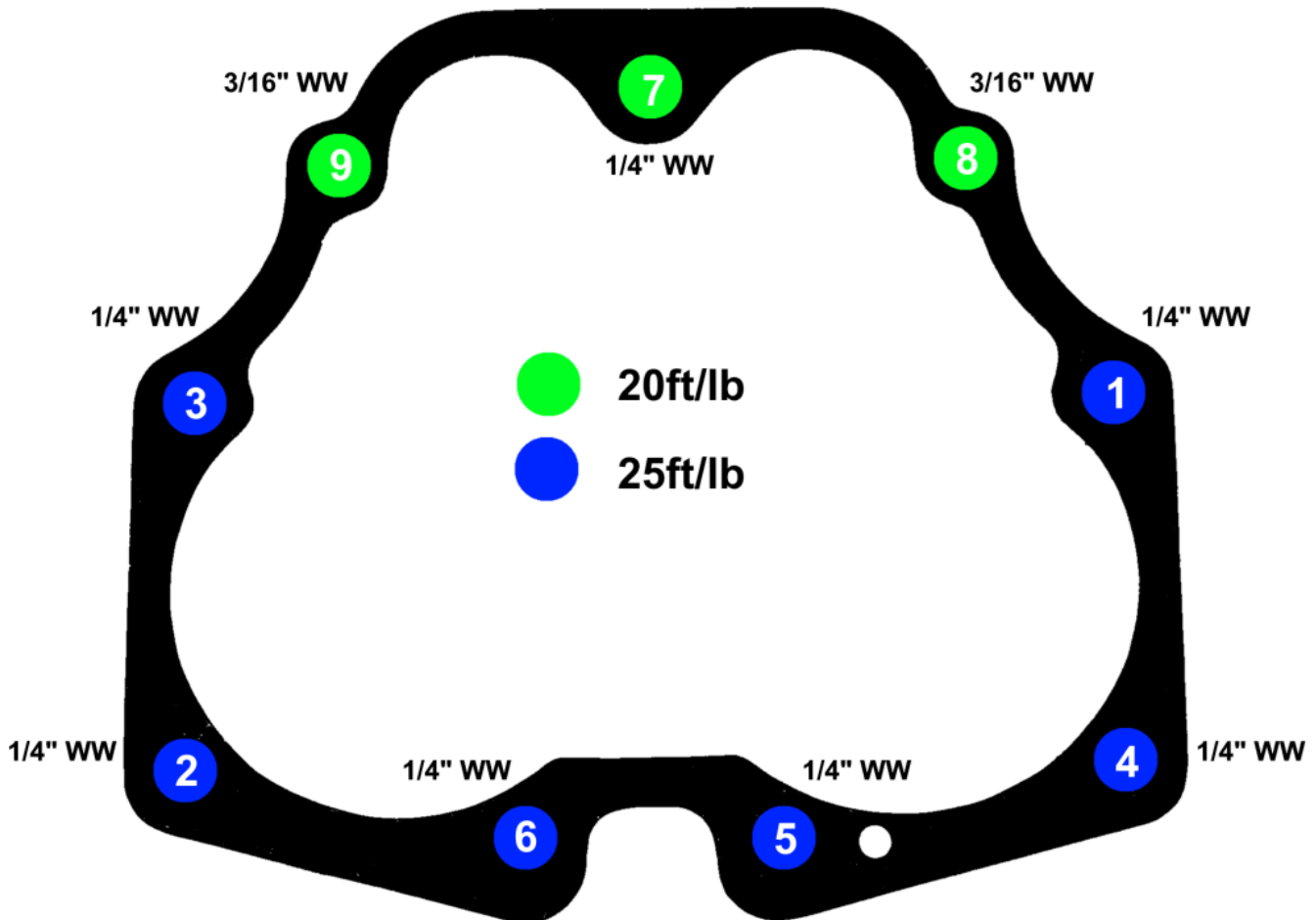
Note 4: 750s originally had sleeve nuts (the ones in the front that secure the head from underneath) that were hex shaped for their full length – part NM.24260. The later bikes used sleeve nuts that were round except that the end is 7/16" AF. The older ones are difficult to work with so it's best to replace them with the new type – part 06.3192. The two 7/16" AF are 1/4" WW (5/16" BS) if you have the older type.



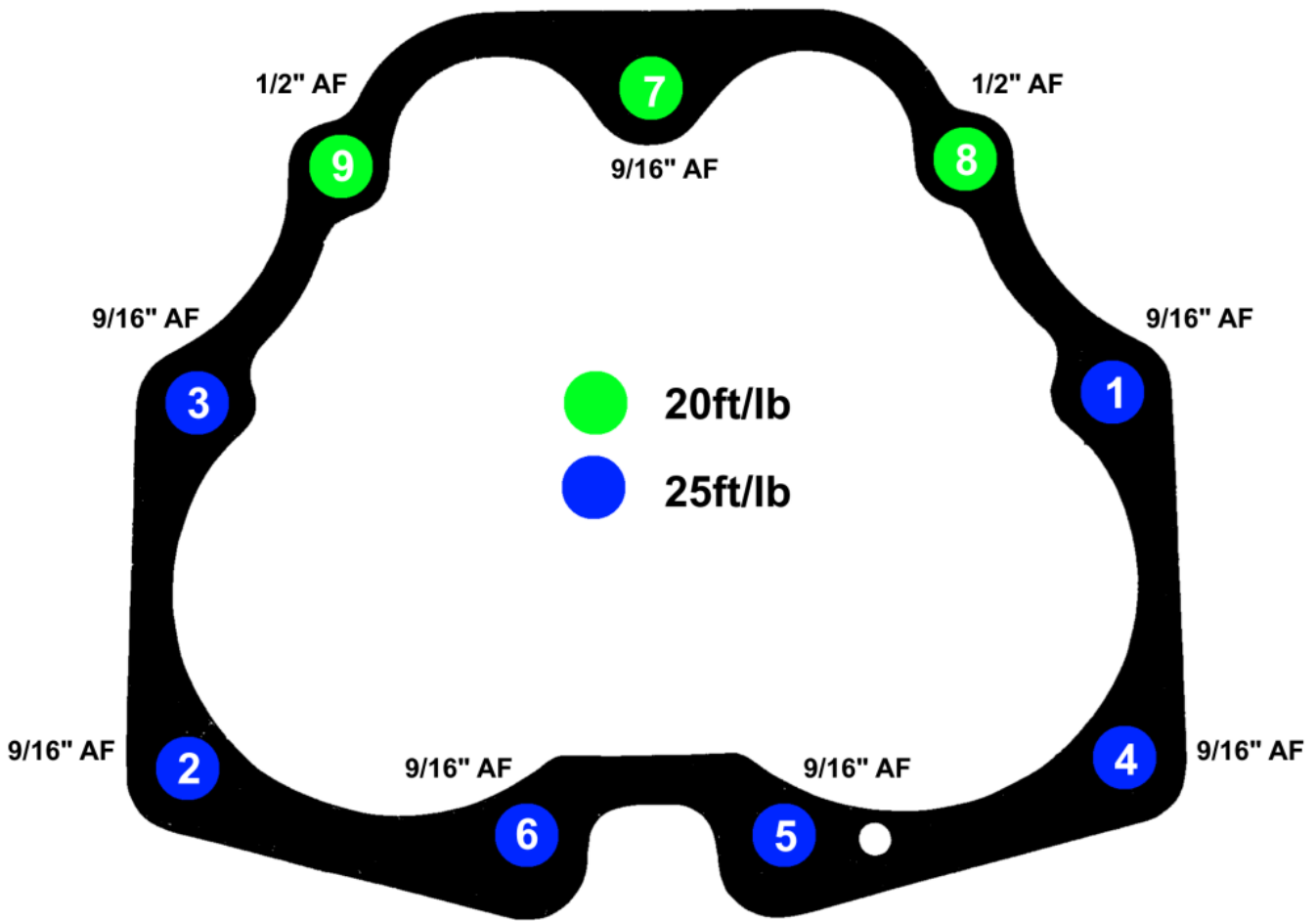
## Cylinder Tightening Order:

The three graphics below show the tightening order (numbers), torque (colors), and wrench sizes for the cylinder base nuts for the 750s and the cylinder base nuts and through Allen bolts for the 850s. I start at 10 ft-lb and follow the sequence, then 15 ft-lb, and follow the sequence, and then the final torque and follow the sequence.

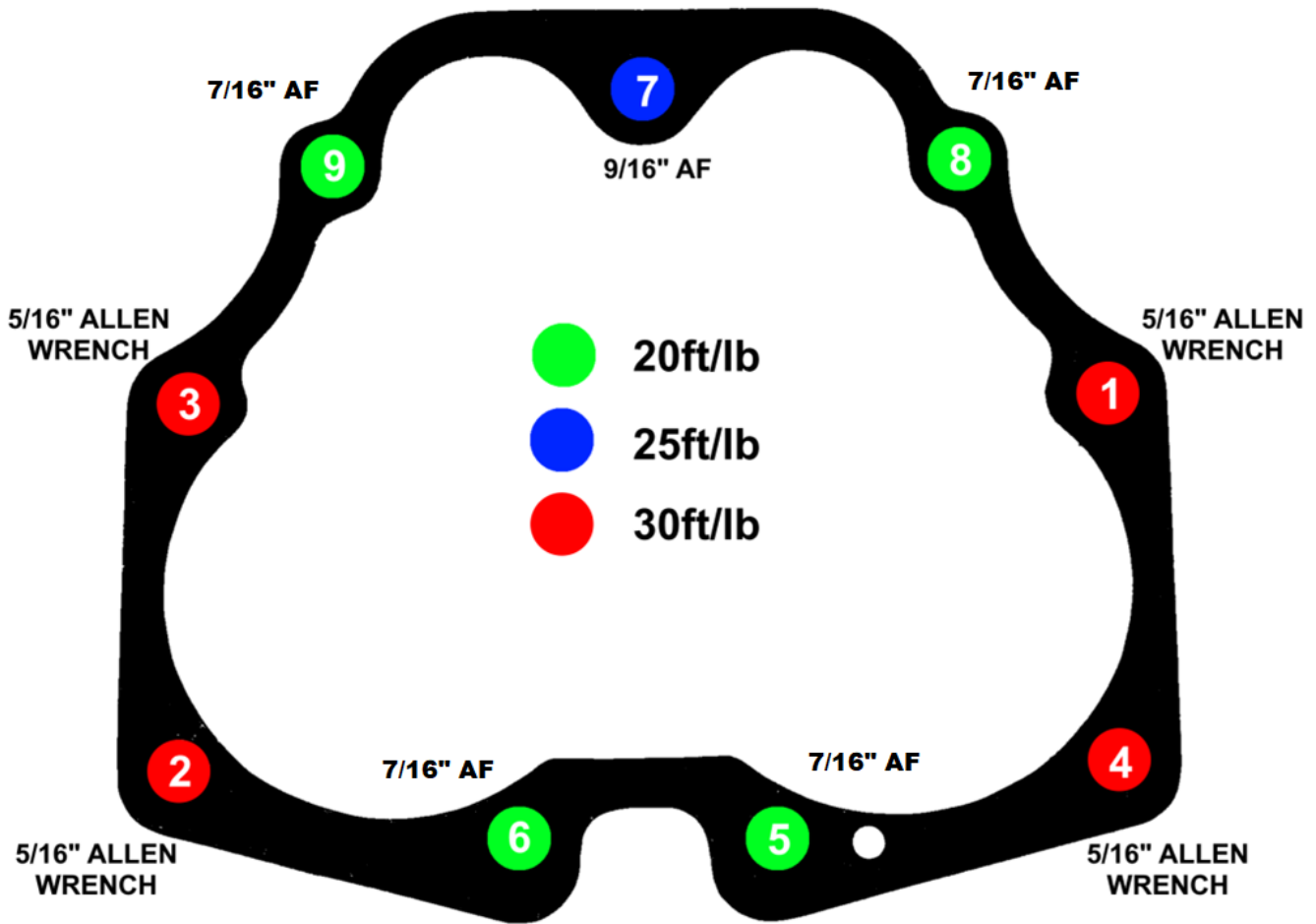
*Cylinder Base 750 Tightening Order, Torque, and Wrench Size Prior to 1972:*



*Cylinder Base 750 Tightening Order, Torque, and Wrench Size 1972/3:*



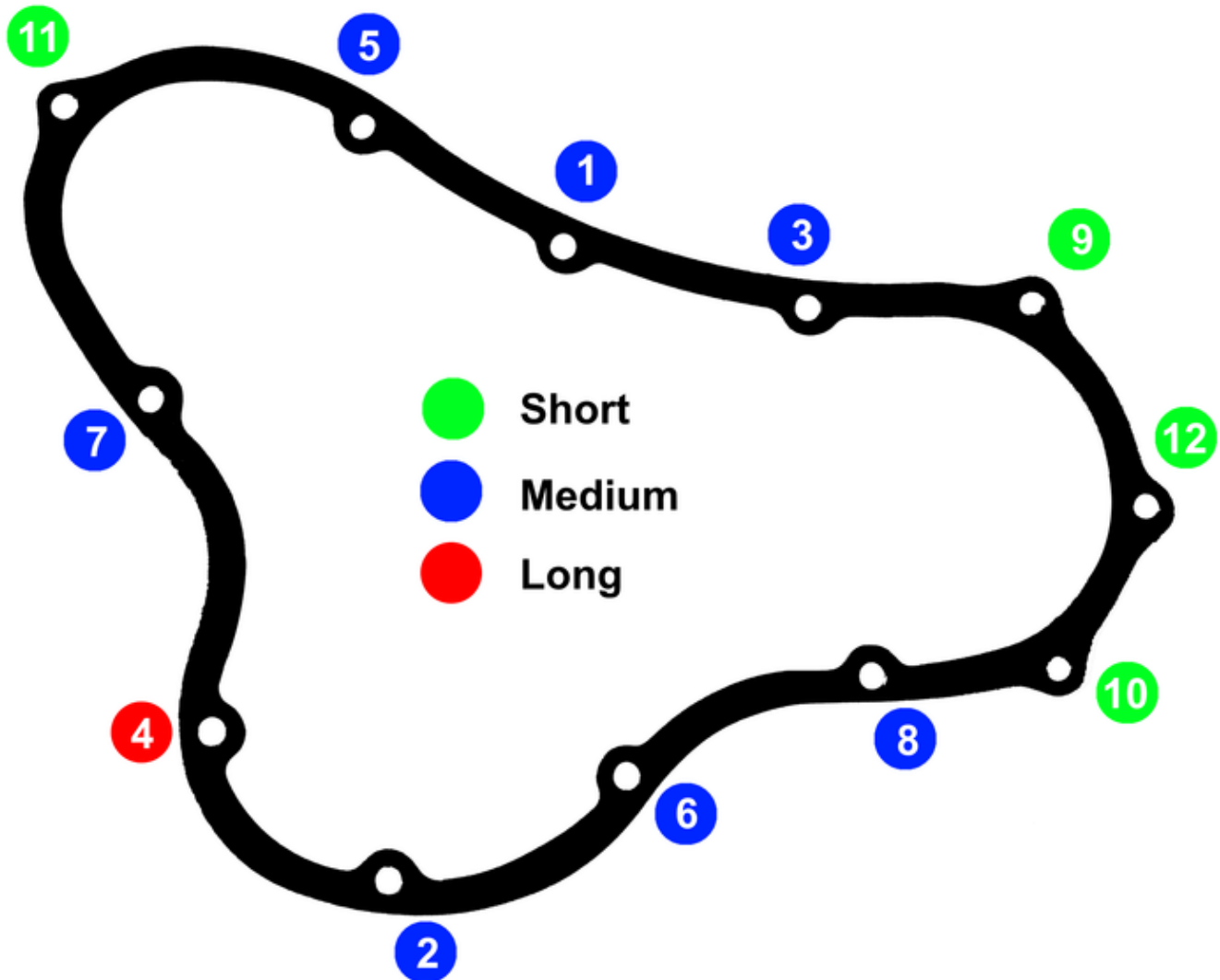
*Cylinder Base 850 Tightening Order, Torque, and Wrench Size:*



## TIMING CASE:

- Cam chain tensioner nuts (2 nuts, 06-2692) 15 ft-lb. (This could be too much 10-12ft-lb sounds better)
- Oil pump stud nuts (no washers, 2 nuts, 06-7592) 10 to 12 ft-lb.
- Oil pump worm gear nut (13-1303, on oil pump shaft) 25 ft-lb.
- Oil pump worm gear/nut (06-7889, LH thread, on end of crankshaft) 15 ft-lb.
- Camshaft sprocket nut (06-7774) 60 to 80 ft-lb depending on cam metal. This seems like too much. On Access Norton, some are saying 25 ft-lb, I use 40 ft-lb.
- Oil pressure release valve (2 nuts) 25 ft-lb.
- I'm told that the PW3 Camshaft sprocket nut (cast iron) must be 15 ft-lb.
- Timing cover screws (12 screws, 1 – 06-2685; 7 - 2686; 4 – 06-2687) 5 - 6 ft-lb (60 - 72 in-lb.) The graphic below shows the tightening order (numbers) and relative screw lengths. I start at 20 in-lb and follow the sequence, then 40 in-lb, and follow the sequence, and then the final torque and follow the sequence.

**Note: The lengths in the diagram are for pre-MK3 engines. MK3 engines still use 12 screws (06-5533) but they are all 1-1/4" long. If you prefer the slotted screws, you could use 12 of 06-2685 (1-1/4" long) or 12 of 06-2686 (1-1/8" long)**



## **PRIMARY CASE:**

- Pre-MK3 Chaincase Attachment Nut (one nut, 06-0367) 25 ft-lb.
- Alternator mounting stud nuts (3 nuts, 06-2692) 15 ft-lb.
- Inner Chaincase fixing bolts (3 bolts, 06-2669) 5 - 6 ft-lb (60 - 72 in-lb.)
- Rotor nut, Crankshaft (1 nut, 06-0387) 70 ft-lb.
- Alternator mounting stud nuts (3 nuts) 15 ft-lb.
- Clutch to main shaft nut (1 nut, 04-0373) 50 ft-lb.) The factory torque setting for this nut is 70 ft-lb but according to Old Britts, this torque setting runs the risk of breaking the clutch locating circlip (06-0752), they say to blue thread locker on this nut and torque to 40 ft-lb and if you want to use 70 ft-lb. you should use a new circlip each time this nut is removed. Andover Norton says 50 ft-lb. I do use a new circlip and 850-type tab washer each time, no thread locker, and 50 ft-lb.
- MK3 Chain case outer screws (10 screws, 06-5533) 5 - 6 ft-lb (60 - 72 in-lb.)
- MK3 Long starter screw (1 screw, 06-5532) 8 ft-lb.
- MK3 Short starter screws (2 screws, 06-4729) 8 ft-lb.

## **GEARBOX:**

- The inner cover nuts (7 nuts, 00-0004) 12 ft-lb. Tighten in a crisscross pattern to 4 ft-lb, then to 8 ft-lb and finally to 12 ft-lb
- Outer cover screws (5 screws, 00-0482) 50 in-lb.) These are fine threads. Use anti-seize, tighten to 30 in-lb in a crisscross pattern and then to 50 in-lb.
- Timing-side main shaft nut (1 nut, 04-0023) 40 - 50 ft-lb.
- Final drive sprocket nut (Countershaft) (1 nut, 04-0070, LH Thread) 80 ft-lb. This can be really hard to accomplish unless you have the correct very deep socket. I get it as tight as I can and call it good.  
*Caution: Fine threads and the sleeve gear has splines, so the thread engagement is small. It is easy to overtighten and damage the sleeve gear threads. If the keeper doesn't line up, try a different rotation – don't try to tighten enough to get it line up!*
- Top gearbox fixing bolt (06-2563) 55 ft-lb.
- Bottom gearbox fixing nuts (2 nuts 14.0305) 55 ft-lb. The stud is part 06-0597
- Kick start pinch bolt (1 bolt, 06-0599) 25 ft-lb.
- Gearshift pinch bolt (1 bolts, 04-0105) 15 ft-lb.
- Drain plug (04.0138 or 04.0138M) 10 ft-lb. It is especially important to not over tighten the magnetic version.

## **FRONT FORKS / WHEEL:**

*Note: The first 5 bullets below specify the tightening order for the front end. At each step it is important to be sure the forks are 100% parallel to each other. If short gaiters are used, this is easy with a piece of plate glass across the forks. With full gaiters, it must be done on the sliders which is more difficult and is usually best done by sighting across them.*

- Fork top bolts (tighten first, 2 bolts, 06-0345) 30 - 40 ft-lb.
- Steering head stem nut (tighten second, 1 nut, 0700101) 25 - 30 ft-lb.
- Spindle nut (tighten third, 1 nut, 06-0361) 60 ft-lb.
- Yoke pinch bolts (tighten fourth, 2 Allen bolts, 06-1911) 30 ft-lb.
- Fork spindle pinch bolt/nut (tighten last) 10 - 15 ft-lb.
- Fork damper tube anchor bolt (1 bolts) 10 ft-lb.
- Nut mudguard bridge stud (2 each fork) 8 ft-lb.
- Disc to hub nuts (5 nuts) 20 ft-lb.
- Front mudguard stay bolt (bottom, 4 bolts) 10 ft-lb.



## **REAR WHEEL:**

- Rear wheel nut (dummy spindle, 1 nut) 80 ft-lb. Note: you must apply the rear brake while tightening this so the brake backing plate is centralized in the brake hub. Norton simply says, “tighten fully”. Andover Norton and Old Britts say 80 ft-lb. I say that is more than needed. I make it tight with a standard ratchet – maybe 40-45 ft-lb.
- Rear wheel spindle (one bolt) 80 ft-lb. Norton simply says “tighten fully”. Andover Norton and Old Britts say 80 ft-lb. I say that is more than needed. I make it tight with a standard ratchet – maybe 40 ft-lb.
- Don Pender’s stainless steel one-piece rear axle 40-45 ft-lb. Since this is stainless, anti-seize must be used to prevent galling. Note: you must apply the rear brake while tightening this so the brake backing plate is centralized in the brake hub.
- Brake Drum Sleeve Nut (three nuts, 06-0323) 40 ft-lb. Note: Only used on older, non-cush hubs.
- Wheel adjuster nuts (2 nuts) 8 ft-lb.
- Speedo cable to speedo Gear Box (06-7904) 15 ft-lb.
- Swing arm pivot pin bolt (one bolt) 10 ft-lb.
- Rear mudguard nut (top, 2 nuts) 8 ft-lb.
- Rear mudguard nut 5/16 (1 nut) 15 ft-lb.
- Rear mudguard nut 1.4 (bottom, 2 nuts) 8 ft-lb.
- Tail lamp pillar nut (2 nuts) 24 in-lb.
- Lift handle-clip nut 1/4 (1 nut) 8 ft-lb.

## **ISOLASTICS/ REAR SUPPORT PLATE:**

- Front bolt nut (1 nut) 30 ft-lb.
- Rear stud nuts (2 nuts) 30 ft-lb.
- Front supporting plate nuts (2 bolts) 25 ft-lb.
- Rear engine plate nut (1 bolt, bottom) 20 ft-lb.
- Rear engine plate nut (2 bolts, upper) 30 ft-lb.
- Engine steady to head screw (3 screws) 12 ft-lb.
- Engine steady stud nut (2 studs) 12 ft-lb.

## **CALIPER:**

- Front caliper to fork bolts (2 bolts\nuts, 0700291) 25 - 30 ft-lb.
- End plug (original caliper, 1 plug, 06-2185) 25 ft-lb. It would take a special/weird tool to actually set this torque. Since there is a rubber seal, I just get it tight using the tool from Andover Norton which probably gets it to 25 ft-lb or more.

## **OIL TANK AND FITTINGS:**

- Oil tank mounting bolt (1 bolt, 06-0652) 4 ft-lb.
- Oil junction block bolt (1 bolt, 03-0448) 8 ft-lb.
- Rubber mounting bolt nuts (2 bolts, 4 nuts, 03-3057) 4 ft-lb.
- Oil filter mounting bolts (2 bolts, 14-0114) 8 ft-lb.
- Rocker feed banjo bolts (3 bolts, 06-7696) 15 ft-lb.
- Oil Tank Filter Bolt (1 filter bolt, 06-1159) Since this uses two soft aluminum washers, I tighten to 10 ft-lb and watch it to see if it leaks, if so, I tighten slightly until it doesn’t. If over tightened, it will certainly leak!

## **MISCELLANEOUS:**

- Side stand nut (1972 - later, one nut) 50 - 60 ft-lb. Since the bolt goes in from the bottom and is thin headed and since you can't get a torque wrench on the nut with the primary installed, just make it really tight. Next time you have the inner and outer primary off, you can do it with a torque wrench if you like!
- Center stand nuts (1 nut each side) 45 ft-lb.
- Coil mounting bracket nuts (2 nuts) 10 in-lb.
- Kick start pinch bolt (1 bolt/nut) 25 ft-lb.
- Balance pipe bolt, exhaust (2 bolts/nuts) 7 ft-lb.
- Carburetor stud nut (4 nuts) 8 ft-lb.
- Carburetor fixing screws (4 screws) 8 ft-lb.
- Shock mounting nuts (2 each shock) 25 ft-lb.
- Chain guard nut (2 nuts) 8 ft-lb.
- Front brake lever pivot bolt (1 bolt) 25 ft-lb.
- Front hydraulic hose nut (1 nut) 15 ft-lb.
- Muffler clamp pinch bolt (1 bolt) 9 ft-lb.
- Zener diode nut (one nut) 24 in-lb.
- Coil clip bolts (2 each coil) 10 in-lb.
- Coil mounting bracket bolts (4 bolts) 8 ft-lb.
- Reflector nut 20 in-lb.
- Screw, condenser pack (2 screws) 24 in-lb.
- Nut, condenser pack (2 nuts) 24 in-lb.
- Horn nut (2 nuts) 8 ft-lb.
- Head lamp bolt (2 bolts) 15 ft-lb.

## **FOOTRESTS:**

- Rear side plate mounting nut (2 each plate) 25 ft-lb.
- Footpeg nuts (1 each footpeg) 40 ft-lb.
- Footrest mounting flange nuts (3 on left 2 on right) 8 ft-lb.
- Footrest mounting bolt (1 on right) 15 ft-lb.
- Passenger footrest bolt\nut (1 each) 25 ft-lb.
- Passenger pivot bolt (1 each rest) 8 ft-lb.
- Mounting rubber nuts (2 each rubber) 10 ft-lb.