

MOTORCYCLE SERVICE NEWS

YAMAHA INTERNATIONAL CORPORATION
BUENA PARK, CALIFORNIA 90620

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285

PAGE

1 of 2

ALL PRIMARY DRIVE/DRIVEN GEAR LASH TOLERANCES

Primary drive and driven gears must mesh properly without binding up or having too much clearance between the meshing teeth. The amount of clearance between the teeth of the meshing gears is called "gear lash".

TOO MUCH GEAR LASH RESULTS IN A GEAR RATTLING NOISE AS THE TEETH LOOSELY BANG AGAINST EACH OTHER WHEN THERE IS NO LOAD ON THEM.

TOO LITTLE GEAR LASH RESULTS IN A WHINING NOISE FROM THE PRIMARY GEARS AS THE MESHING TEETH ARE SQUEEZED AGAINST EACH OTHER.

To help determine if a primary drive gear and primary driven gear have proper gear lash, the factory scribes numbers on each gear (see figure #1). Add these numbers together and match the results with the number on chart below. The two numbers must combine to equal the amount listed (tolerances are also listed), or one must be changed to achieve the desired number. It does not matter which gear is changed, just so the two numbers add up correctly (preferably the drive gear, since it is less expensive and requires less time to change).

If the sum of the two numbers is less than listed, then there will be too much gear lash. If the sum is more, then there will be too little gear lash.

The information below can be used when installing new primary gears, or to troubleshoot noise in already installed primary gears.

<u>MODEL SERIES</u>	<u>GEAR LASH NUMBER</u>	<u>TOLERANCE</u>
U5	141	± 2
JT1, JT2	136	± 2
G1	140	± 2
G5, G6, G7S	140	± 2
HT1	140	± 2
HS1	150	± 2
L5	140	± 2
LS2	150	± 2
LT2	140	± 2
AS1, AS2	150	± 2

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PAGE
2 of 2

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<u>MODEL SERIES</u>	<u>GEAR LASH NUMBER</u>	<u>TOLERANCE</u>
AT1, AT2	133	± 2
CT1, CT2	133	± 2
CS1, CS3, CS5	128	± 2
DS6	157	± 2
DS7	99	± 2
DT1/RT1	101	± 2
DT2/RT2	102	± 2
R3	95	± 2
R5	100	± 2
XS1/XS2	Use any stock parts	

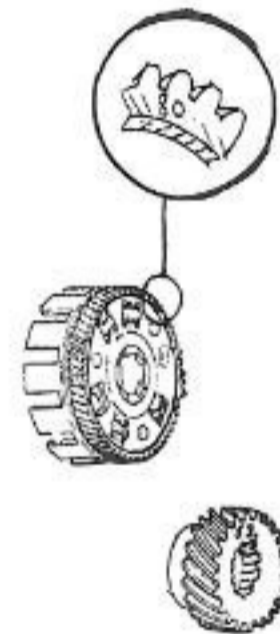
MEASURING GEAR BACKLASH

Lash numbers scribed on primary gears are accurate 99(+) % of the time. Occasionally, however, numbers can add up correctly, but gear whine or rattle may still occur. Slightly eccentric gear shape, a bent shaft, or gear wear can cause this occurrence. Gear lash must then be measured so that corrective procedures can be performed.

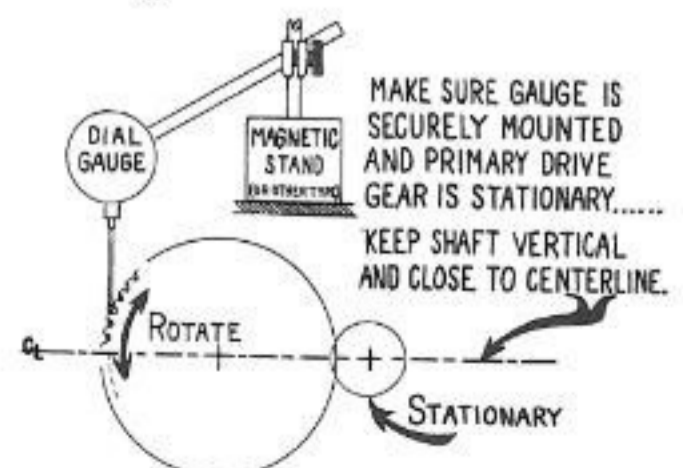
The most accurate method to measure back lash is to mount a dial gauge as shown in the drawing (right). The long dial gauge tip from the snowmobile special tool kit is a most suitable aid.

Make sure the :

1. Dial gauge is firmly mounted.
2. Primary drive gear is stationary at all times.
3. Dial gauge shaft is at a right angle to the primary drive and driven gear shaft center lines.
4. Dial gauge tip is resting on a gear tooth side at, or very near, the shaft center line.
5. Rotation of each gear is measured every 90°. This procedure will aid in locating any out-of-roundness present in gears or shafts (Lash will increase or decrease).
6. Actual amount of lash. Increase amount (by alternating gears) to improve a gear "whine" problem; decrease to improve a gear "rattle" problem.



Dwg. #1



Dwg. #2