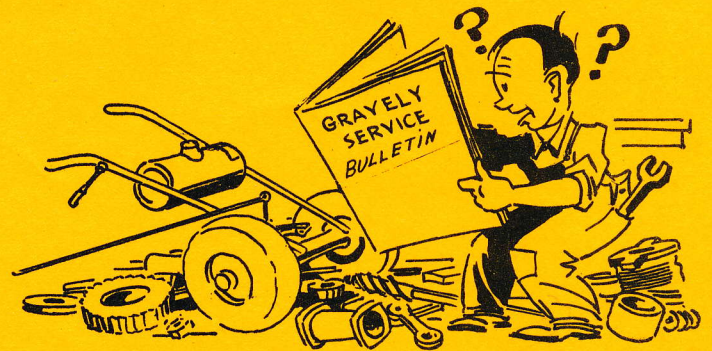


# GRAVELY BULLETIN service information

BULLETIN NO: 597  
DATE : October 25, 1955  
TO : All Distributors & Dealers  
SUBJECT : RECENT MECHANICAL CHANGES & IMPROVEMENTS.



As you know, we are engaged in a definite program of improvement on the Gravelly Tractor and attachments. The results of our work is now becoming apparent, as many of the changes have been made on Tractors which are now moving out of distributor and factory stocks.

Necessarily, any change or improvement takes a while to take effect in the field because older stocks must be worked out. However, the changes discussed here are either now in equipment in general use, or will be in a very short time.

## CONNECTING ROD BUSHING

The connecting rod bushing is now a split, rolled bronze bushing, steel backed. This bushing presses firmly into the rod, and its construction is such that it will not rotate. The same part number applies in ordering.

## BEARING CHANGES

We have changed our Timken bearing sizes as listed below. The reason is simply to get into the more popular sizes, as used in volume production for automobiles. The load factor is still very high--the mean loading is 34% of capacity. The highest loading is 55% of capacity, the lowest 6%. This is the % of the maximum load that could be placed on the bearing in continuous use.

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>REPLACED BY</u>
L-610	Axle Bearing	RB-110
L-609	Differential Bearing	RB-111

Housings affected are:

L-203-A	Axle Housing	L-203-D
L-204-A	Axle Housing Bearing Cap	L-204-D
L-219-A	Axle Housing Bearing Cap Shim	L-219-D

## AIR COOLING SYSTEM

The cooling system on the Tractor has been improved by several changes. The Fan has been changed, and Air Deflector Plates have been installed on all current production, and will continue to be. The advantages are: Greater air movement from a more efficient fan, better cooling since the air is deflected to move over all the fins on the cylinder. Our tests show that the engine runs approximately 180° F cooler with this new cooling system. Part number for the Fan remains the same, the Air Deflector parts and prices have been furnished on a previous bulletin. (Bulletin No. 586)

## NEW SPARK PLUG

Research into the problem of fouling and starting spark have resulted into a change of spark plugs. The new Plug is Autolite BT-15. It is a "hotter" plug, and its construction is such that it is almost impervious to fouling. (Gap setting is the same.)

## VALVE GUIDE CHANGE

We have been eliminating the counter-bore from the Valve Guide for some time, in an effort to help the "sticking valve" problem. It has been only moderately successful. Working with our valve supplier and our engineering department, we are now installing a special heat-treated valve guide in which there is absolutely no free ferrite. Free ferrite is one of the primary causes of valve sticking. The ferrite is very hard. It scores the fine finish of the valve stem, which forms "burrs". These burrs have a mechanical locking effect, which contributes to the sticking problem. Elimination of the free ferrite will help a great deal. This, plus the cooler running temperature of the engine, will give a decided improvement in valve operation.

Incidentally, this is the same type of valve guide as is used on big Diesel engines, where this problem was formerly acute until the guides were heat treated.

NOTE: These guides are toleranced to fit when you receive them. DO NOT ream or attempt to counterbore or otherwise doctor them!

## INTERNAL GEAR

The material in the L-501 Internal Gear has been changed to Meehanite. The Meehanite material has been recommended by our foundry supplier's engineer as more wear resistant than the material previously used.

### CAMSHAFT BUSHING

We have changed the Camshaft Bushing and Expansion Plug to be ready for another contemplated engine improvement. The bushing size changes from 1", as it is now, to 7/8".

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>CHANGED TO</u>
L-410-O	Camshaft Bushing	L-406-O
L-410-I	Camshaft Bushing	L-406-I
L-411	Expansion Plug	L-414

### CAMSHAFT TIMING

One of the most important improvements we have made to the Gravely Tractor is the new timing of the Valves, brought about by the change in the cam shape and location of the keyway in the Camshaft, as well as a very strict inspection and quality control of the parts affected.

The advantages are: Longer engine life, because the engine runs cooler; a more efficient engine, and--as a by-product--a fractional gain in horsepower.

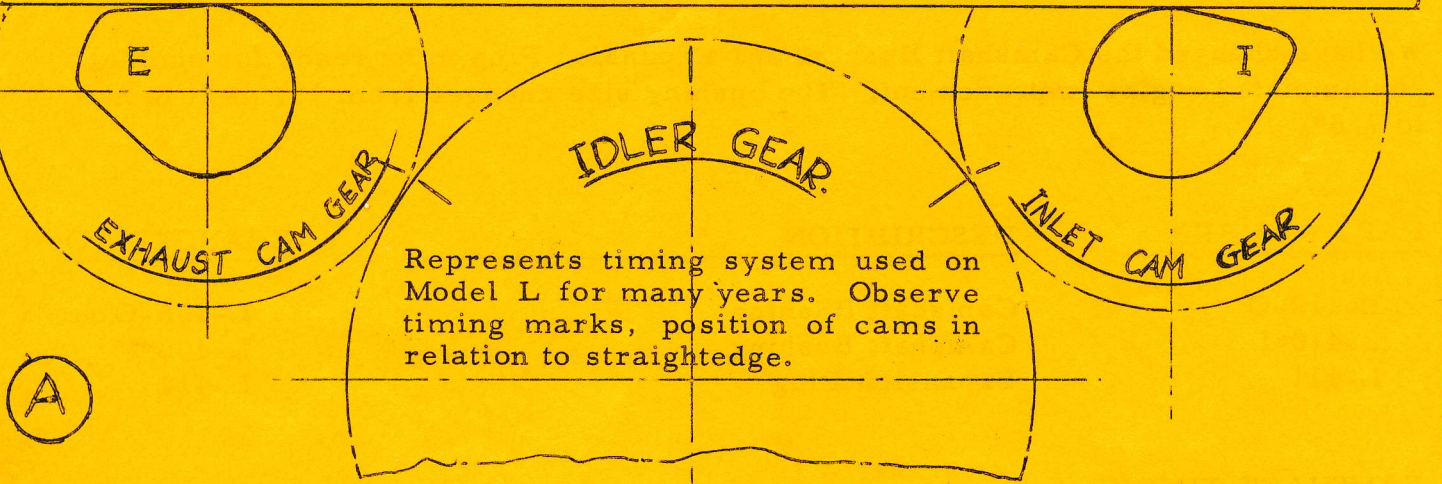
The power and efficiency of any engine depends upon its timing, as you well know. On the back of this page is a drawing which shows you exactly how a correctly timed gear train and camshaft assembly should look. It is imperative that this be done accurately. Also with the drawing is a table of cylinder measurements that may be used to determine whether or not the engine is correctly timed for maximum efficiency.

### TANK BAND

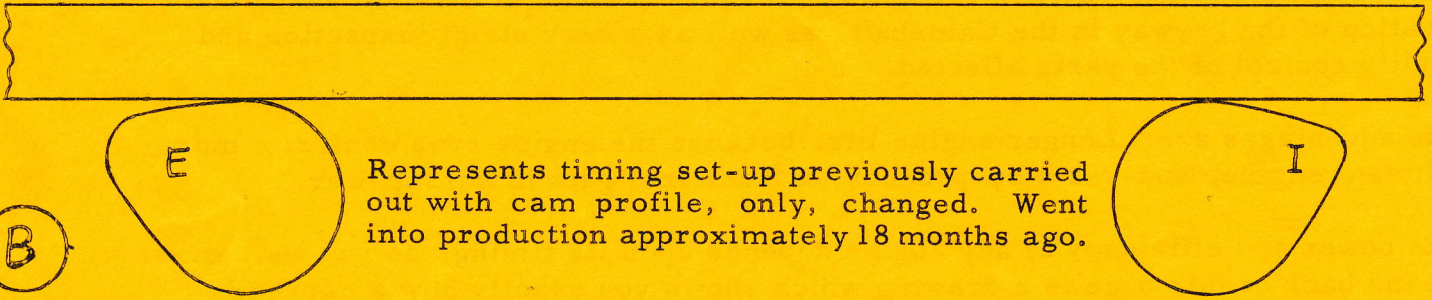
We are now using a spacer (Part Number L-120) on the Bolt where the Tank Band is drawn up around the Tank. The purpose is to give a solid stop for the band, and hold the tank without putting the band under strong tension, and also relieving any "squeeze" on the Tank. Relief of the squeeze will help prevent leaks developing.

We recommend that you install this spacer on all repaired tractors, and recommend it to your customers.

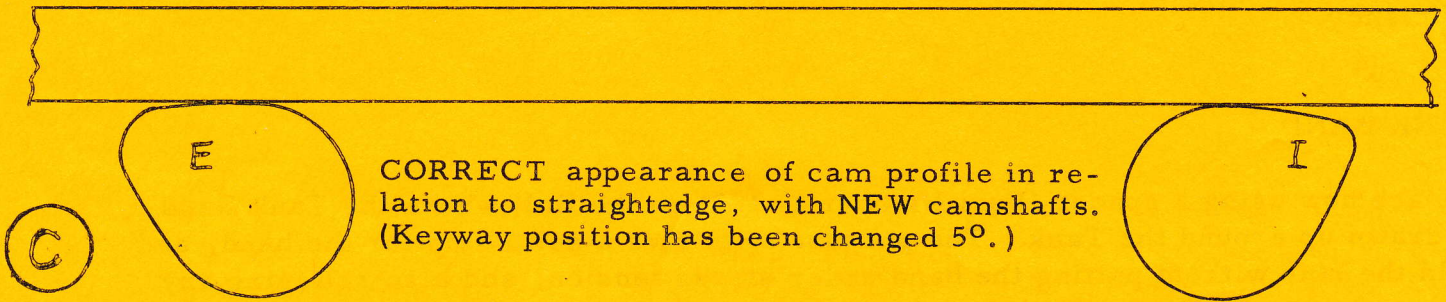
STRAIGHT EDGE.



Represents timing system used on Model L for many years. Observe timing marks, position of cams in relation to straightedge.



Represents timing set-up previously carried out with cam profile, only, changed. Went into production approximately 18 months ago.



**CORRECT** appearance of cam profile in relation to straightedge, with **NEW** camshafts. (Keyway position has been changed 5°.)

When repairing older tractors, use new Camshafts, which will give the appearance shown in (C). To check if Valve Timing is correct, (Engine cold) set Valve Tappet at .0015 (Cigarette paper). Cylinder head off. Intake Valve should just start to open as piston begins to move down from Top Dead Center of compression stroke. Exhaust Valve should just close 5/32 from T.D.C. on same down stroke. After checking, re-adjust tappets to .012 before running engine.

## PLASTIC CLUTCH GRIPS

The Plastic Handle Grips have been so successful that we are extending the use of Plastic Handles to the Clutch Levers.

## ATTACHMENT CHANGES

### Reel Mower

The M-470, 30" Grass Shield is now furnished made of 1/8" thick steel, instead of the thin gauge previously furnished. This change was made to add to the structural rigidity of the mower. In addition, we have taken quality control steps in the machining of the Bed Knife Bar, to make sure the milled edges at each end of the Bar are absolutely square. We have found that it is very difficult to hold adjustment of the mowers if these surfaces are not perfectly square. If you have difficulty in holding an even cut all the way along the Bed Knife, it would pay you to check the squareness of these edges, and true them up if necessary. (We also suggest you recommend the new shield to your present users.)

### Sickle Mower

We have changed suppliers for the castings for the 2" Guard, 3502-A, and are now fabricating and machining these guards here, in order to hold a better and more uniform quality.

### Rotary Mower

Present production of the Rotary Mower Drive now has Straight tooth gears instead of the previous beveled gears.

## PRODUCTION IMPROVEMENTS

We have recently purchased two Warner and Swasey automatic chuckers. These machines are the very latest in production machinery. In addition to allowing us to produce casting work more efficiently, they are also precision machines that improve the quality of parts machined on them, because they can operate at very close tolerances, which means more precisely made parts.

In addition, we have installed and are now operating a Natco Multiple Drilling machine. The precise drilling of multiple holes is speeded up, and we are able to produce work with very close tolerances on this new equipment.

In addition, we are purchasing a Precision Jig Boring Machine for our tool shop, which will give us better jigs and tools for our production machines.

It is impractical to list all of the production improvements that are being made here. We are on a definite, planned program of improving tooling and quality control, under the careful supervision of highly skilled engineers.

All of these things means that the Gravely Tractor and its Attachments will continue to be improved, for greater customer satisfaction, and for ever-expanding sales.