GRA

Condensed
Service
Data

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AVELY TRACTORS, INC., DUNBAR, WEST VIRGINIA,

NTED IN U. S. A.

MARCH 1

CONDENSED SERVICE DATA

GRAVELY MODEL L TRACTOR ENGINE

The purpose of this booklet is to furnish the mechanic with the necessary information he needs to properly fit and service the Engine and Crankcase assembly of the Gravely Model L Tractor. Detailed assembly and dissassembly methods will not be discussed since the illustrations should give sufficient guidance to proper methods.

ENGINE AND MODEL DATA

Model	Cylinders	Bore	Stroke	Displacement
L	1	3-1/4"	3-1/2"	29.0 Cubic Inches

Key to Model Designations and Suffixes

LS--"Slow Speed" (4 Thread Worm)
LI--"Intermediate Speed" (6 Thread Worm)
L--Standard "High Speed" (8 Thread Worm)

On the name plate serial number, M prefix means 100,000. For example, Tractor serial number "100105" would be shown as "M105".

MAINTENANCE

Spark Plug

Recommended: Auto-Lite TT-15
Electrode Gap .033

Carburetor

See separate instructions.

Magneto

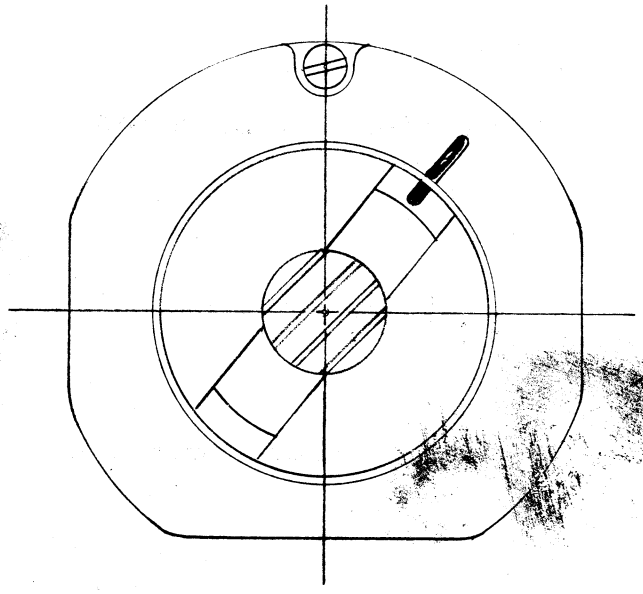
See separate Magneto instructions. see Page 9

Timing Magneto to Engine

Before timing spark to engine, inspect face of Magneto and locate timing marks. If the timing marks are two lines, one on the Magneto face and one on the Coupling, proceed by Method 1. If the timing marks are a line and a dot on the Magneto face, and a line on the Coupling, proceed by Method 2.

TABLE OF ENGINE SPEEDS AND GROUND SPEEDS

Slow Speed Tractor	Medium Speed Tractor	Regular Speed Tractor	Engine RPM	PTO RPM
		High Gear:		
1mph	1-1/2 mph	2 mph	1364	682
1-1/2 mph	2-1/4 mph	3 mph	2046	1023
2 mph	3 mph	4 mph	2728	1364
		Low Gear:		
1/2 mph	3/4 mph	1 mph	946	341
1 mph	1-1/2 mph	2 mph	1892	682
1-1/2 mph	2-1/4 mph	3 mph	2838	1023



MAGNETO FACE PLATE

To accomplish by Method 1. (Two Lines)

1. Remove Air Cleaner, Air Cleaner Bracket.

2. Loosen Magneto Coupling Nut until it slips on the Camshaft. It may be necessary to tap coupling gently.

3. Remove Cylinder Head.

4. Bring Piston to Top Dead Center on the compression stroke (both valves closed). Measure, accurately, the distance from top of Piston to top of Cylinder Wall. Record this measurement, then add 5/16 of an inch.

5. Turn the Starter Pulley counter clock - wise until the Piston goes down the cylinder approximately an inch. Then bring Piston back up Cylinder slowly until it is the distance calculated in step four. (5/16" plus distance from top of Cylinder Wall to Piston at Top Dead Center). This procedure takes up any back-lash in the gears.

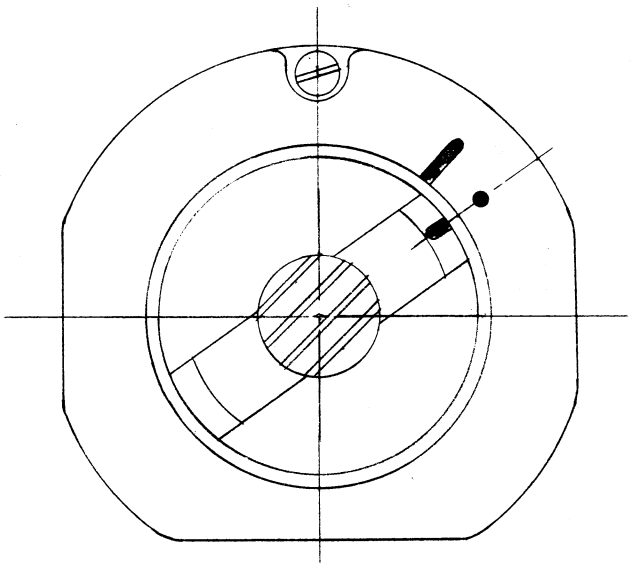
6. Hold the Magneto Shaft Extension with Vise-Grip Pliers so it will not move. Rotate the Magneto Impulse (inoperative) until the timing marks line up.

7. Be sure that there is at least 1/64" end play in the Magneto coupling so it will not cramp the impulse. Use a 1/64" (.015) Feeler Gauge between the Fiber Block and the Coupling Flange before tightening nut. Tighten nut while holding timing marks together.

8. Check your settings by backing the Piston not more than two inches down the cylinder barrel (to avoid picking up Magneto impulse) and review the procedure.

9. When timing is correct, lock Magneto Coupling Nut.

10. NOTE: Timing Marks will not line up when piston is at Top Dead Center.



MAGNETO FACE PLATE

To accomplish by Method 2. (Lines and dot)

1. Remove Air Cleaner, Air Cleaner Bracket.

2. Loosen Magneto Coupling Nut until it moves on the Camshaft. It may be necessary to tap the coupling gently.

3. Crank Starter Pulley until you feel the beginning of the Compression Stroke. Remove Spark Plug, observe by eye or, more accurately, measure to piston surface until

Piston is exactly at Top Dead Center.

4. Hold the Magneto Shaft Extension with Vise-Grip Pliers so it will not move. Rotate the Magneto Impulse (inoperative) until timing marks (line on Coupling and dot on Magneto) line up.

5. Reassemble Magneto Coupling, use 1/64th (.015) Feeler, between Fiber Block and The Coupling Flange before tightening Nut, so you will not cramp the impulse. Be sure timing marks are together while tightening nut. 1/64 (.015)

6. Lock Magneto Coupling Nut. Replace Air Cleaner and Bracket.

7. NOTE: Timing line on Coupling and dot on Magneto line up at Top Dead Center.

LUBRICATION

Capacity is 5 PINTS. Engine and Chassis are lubricated by the same oil. Use only Motor Oils, do NOT use transmission oils or greases.

For Summer:
Mobiloil AF (SAE 40)

For Winter:
Temperature range from 32° to 10° F. Use Mobiloil Arctic (SAE 20-20W) 10° and below, Mobiloil Special (SAE 10-10W).

Oil is checked by having tractor level. Remove Try-Cock Wing Nut on Chassis. If oil runs out, you have enough. When filling, be sure to fill only until oil runs out.

REPAIRS

Crankpin

Crankpin diameter is 1.497/1.498, and the Connecting Rod big end Bushing must be reamed to 1.500. The Crankpin diameter has been changed. We suggest you accurately "mike" the Crankpin. If less than 1.497, ream the Bushing to give .002/.003 clearance.

Connecting Rod has bronze Bushing, pressed into Rod. Crankpin into Flywheel is a .001 to .003 interference fit. An interference fit means that the Crankpin is actually .001 to .003 larger than the hole in the Flywheel. The Crankpin must be a very tight fit to keep it from turning. Therefore the Crankpin is pressed into the Flywheel. (Note that Flywheel must be pressed tightly to shoulder on Crankpin.)

Piston, Pin, Rings

Piston is equipped with three Rings:

1 Chrome Compression Ring
1 Steel Compression Ring
1 Oil Scraper Ring

Ring gap should be .012 to .015. Replace if .030 or over.

Piston Pin (Wrist Pin) is .859 diameter. Small end of Connecting Rod holds Bronze Bushing which should be reamed to .860/-.861.

Piston Pin (Wrist Pin) is a solid fit in the Piston. It is a light push fit in a hot Piston.

Piston skirt clearance is .003/.005, measured with a Feeler Gauge at right angles to the Piston Pin.

To determine if cylinder needs reboring:
1. Use any Piston Ring, inserting it in the cylinder 1/2 inch from the bottom of the bore, using the piston to square it with the sides. Measure the Gap with Feeler Gauge.

2. Use the same ring, 1/2 inch from the top of the Cylinder, seated true with piston, measure the gap.

3. Subtract smaller reading from larger reading, then divide by 3.

4. If result is more than .006, we recommend the cylinder be rebored to the next .010 over size. Pistons and Rings are furnished in oversizes: .005, .010, .020, .025, .030. Diameter of Standard Cylinder is 3.2545/3.2535.

Crankshaft

Drive Pinion Shaft Bushing should be reamed to 1.0005/0.9995. The Drive Pinion Shaft is factory toleranced to .9975/-.9965, which gives an overall clearance of .002/.004. (Drive Pinion Shaft Bushing is furnished in .005, .025 O. D. Oversize).

(Drive Pinion Shaft Bushing is fitted into hot crankcase.)

The Timing Pinion Shaft is fitted into the Ball Bearing at manufactured tolerance.

Camshafts

Camshafts must be timed very accurately to engine for best results. See timing diagram.

On Tractors manufactured before September 1955, the appearance of the Cam profiles in relation to a straightedge will vary as shown in the same Timing Diagram. On all models, when checking Timing, carefully observe the Cam profile and position. If not as shown in sketch C, replace Camshafts.

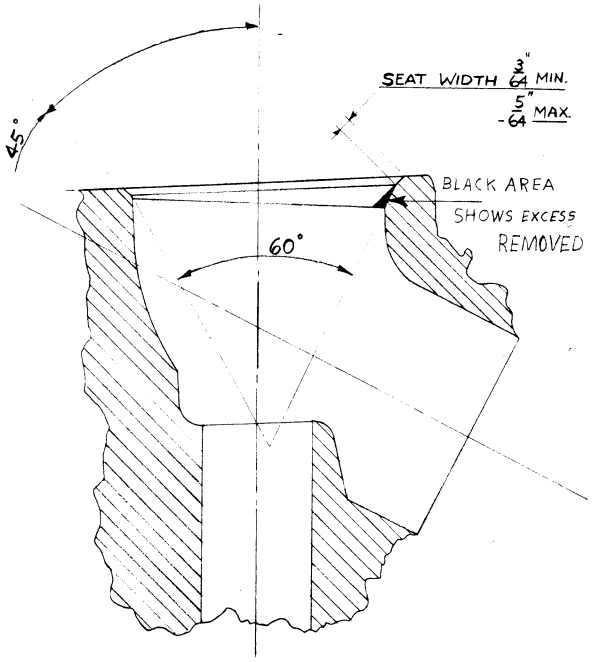
Camshaft Bushings are reamed with a .750 reamer. Camshaft diameters are precision ground to .7480/.7490. Clearance should be .001 to .003.

NOTE: Bushings should be line reamed, in place in bolted-together Crankcases. Crankcases must be replaced, when necessary, in Pairs.

Valve System

Grind Valve Seat Angle 45° degrees. Seat must be square with Valve Guide bore. Seat width dimensions are 3/64" to 5/64". Finish with Valve Grinding Compound to insure good seat and compression. Rough: Government Grit grade 120 (E); Finish: grade 280 (A).

If Valve Seat exceeds 5/64" on one side, use a 60° Valve Seat Reamer, to remove excess valve seat width.



Timing of Valves is accomplished by Camshaft timing. See "Camshaft".

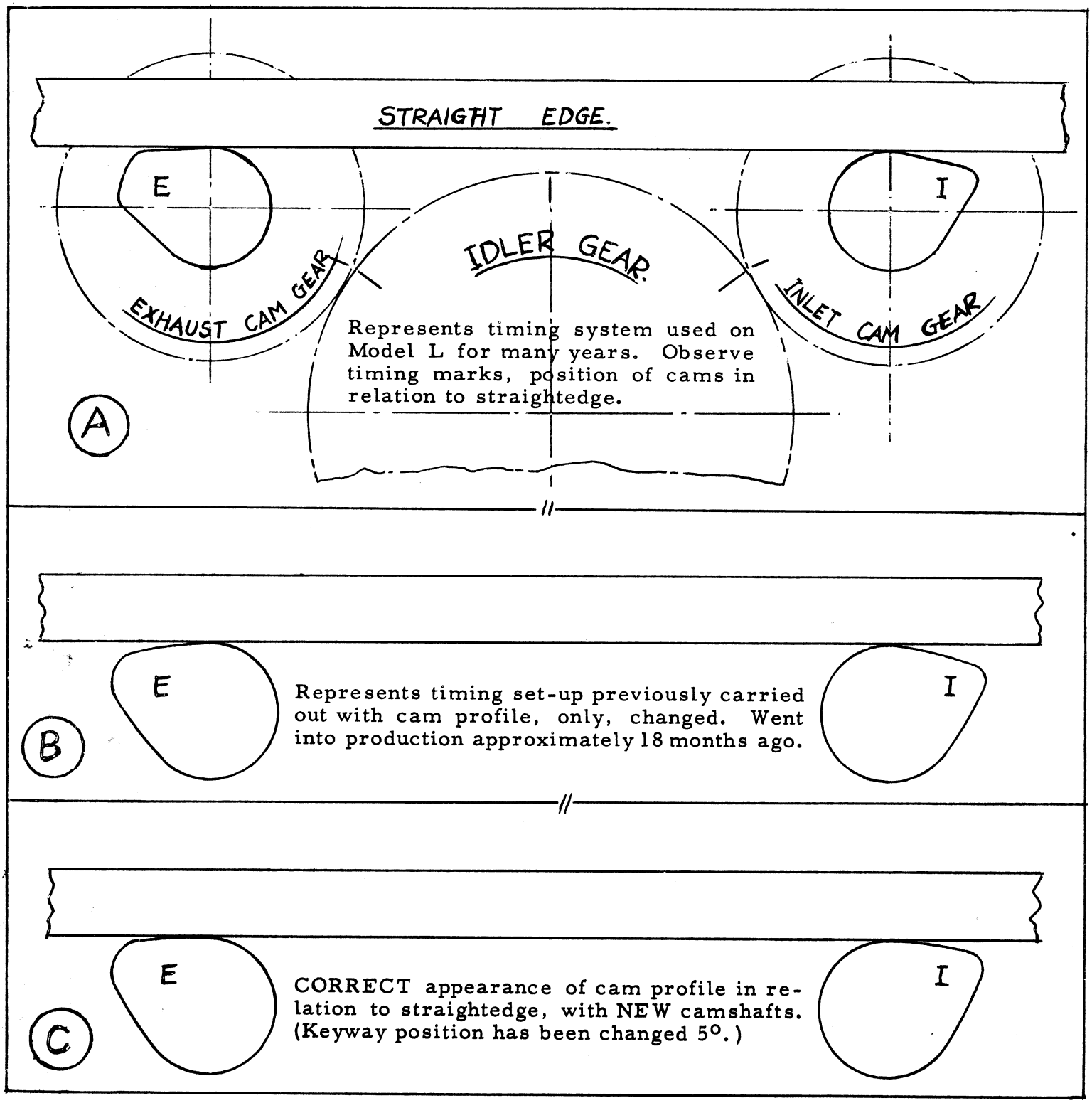
Valve Tappet clearance, engine COLD, is .012, exhaust, .008, intake, obtained by adjusting Valve Tappet.

Valve Clearance in Exhaust Valve Guide is factory toleranced. Intake Valve clearance is .002/.004.

Valve Plunger is .7485/.7495. Valve Plunger Guide is reamed to .750/.751. Clearance should be .0005 to .0025. (Tight slip fit.) (To prevent oil leakage around valve plunger, maintain this clearance.)

Valve Sleeve Gasket should be permatexed or shellacked.

Replace Valve Springs if you can squeeze together with one hand.



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 at the Top Dead Center of Exhaust stroke. After piston passes Top Dead Center going down on the Intake stroke the exhaust valve should just close at 5/32" from Top Dead Center. After checking, re-adjust tappets to proper clearance before running engine.

Oil Pump

Oil Pump is a precision gear pump. Fits and tolerances must be held closely to insure good oil supply at essential lubrication points.

Oil Pump Bushing should be reamed to 7/16" (.4373/.4388). The Oil Pump Master Gear Shaft is toleranced at .4363/.4368, which means clearances must be held to .0005 to .0025.

Oil Pump Gears must be a snug fit in the Oil Pump Cap.

To Accomplish:

1. Press Idler Gear Pin into place by starting it in the Crankcase, placing the Idler Gear over it, and pressing it until it is flush with the top surface of the Idler Gear.

2. Place Dowel Pin in Crankcase. Assemble Oil Pump Gears and Oil Seal in Cap. Check that the Gears are flush with surface of Oil Pump Cap with the Gasket in place.

3. Assemble to Crankcase.

4. Put a 9/16" socket and speed handle on the Oil Pump Idler Gear Pinion Shaft Nut and turn, gradually tightening down the cap, turning continually as cap is tightened.

5. After cap is seated, wash out scrapings by putting oil in large opening and turning speed handle until all scrapings are washed out.

Note that the Idler Gear Stud must be checked carefully to see that it is the same height as the gears. Also, be sure to check Oil Pump Gears to be sure they are the same thickness and that they are free of burrs. Never put new gears in an old Cap.

TROUBLESHOOTING
Tractor Engine Fails to Start

Probable causes are, in order of their frequency:

1. Out of Fuel
2. Fuel shut off at sediment bowl
3. Stuck valve
4. Fouled or out of adjustment Spark Plug.

5. Magneto failure
6. Timing failure

Tools needed for this service work: Feeler Gauge, Screwdriver, light Ball Peen Hammer, 1/2" 6 pt Socket and Wrench, 15/16" Spark Plug Wrench, can of penetrating oil (may substitute 1/2 and 1/2 No. 10 Oil and Kerosene).

TO CORRECT:

1. Check Gas Tank, fill if empty.

2. Check Shut Off Valve at Sediment Bowl, to make sure it is open wide.

3. Turn engine over slowly by HAND, to see if engine has compression. If engine HAS COMPRESSION,

4. Remove Spark Plug, check for fouling, burning, wetness. Remove carbon, dry if necessary, reset at .033. If Spark Plug appears to need replacement, replace with Autolite TT-10.

5. If you DO NOT have COMPRESSION, you usually will have a valve stuck open. The primary sympton is a sudden (usually overnight) loss of compression. Lack of

compression due to Ring Trouble is a gradual loss, getting progressively worse, and characterized by oily smoke from the exhaust for some period before actual complete compression loss.

6. Remove cylinder head. (Observe Gasket. Replace if necessary).

7. Check to see if there is any bit of carbon on the Valve seat which might be preventing the Valve from completely closing. If so, remove and grind Valve to a good seat if necessary.

8. If no carbon bits are present, flood the Valve and stem with penetrating oil. Let "soak" a few minutes, flood again. Using a screwdriver in the slot on top of the Valve, begin working the Valve by attempting to rotate the valve. If this is unsuccessful, flood again with penetrating oil, (IMPORTANT: Turn engine over until impulse clicks—to be sure you don't break Cams.) Then tap the Valve lightly with the hammer. Again use the Screwdriver. The Valve will usually break loose in a very short time. Continue to work until it is perfectly free, and rises and falls with the turning over of the engine.

9. Observe the seating and the action of the Valves. If a Valve Grinding Job is indicated, recommend it to the customer at that time. If Valves need replacement, recommend it.

10. Occasionally a Valve is stuck closed. This is rare, however. The symptoms will show up immediately when you attempt to turn the engine over by HAND. The Engine will "stop dead" at a certain point. Reversing the direction of turn, the Engine will stop again at the same point in the firing cycle. The procedure is exactly the same as for releasing a Valve that is stuck open. WARNING: Never attempt to test for a stuck valve by turning the engine over in any manner except by HAND. Turning an Engine over with a strap, or by forcing, when a Valve is stuck closed will result in fracture of the Crankcase, necessitating replacement.

11. If the Engine has compression, the Spark Plug is in good order, etc., test the spark.

12. The Spark should jump at least 3/16" when tested by putting the end of the Magneto Cable connection this distance from a metal object. (Usually the Cylinder Head).

13. If the Spark is weak, it is usually caused by condensation within the Magneto. Remove the Cap, dry out the Magneto. (You can observe the wetness when the Cap is removed.)

14. Normally, if the Magneto is not firing correctly, routinely replace Coil, Condenser, and points.

15. If it is impractical, or undesirable, to replace all of these parts, observe the Points first, to make sure they are breaking, and are not burned or dirty.

16. If the Points are dirty or wet, clean by using a piece of hard paper. (A piece of paper from a "slick" magazine works well.) Spread the Points by hand, release on the paper, and pull the paper through.

17. Adjust the Points. On Wico Magnetos, the setting is .015: on Bendix-Scintilla, .018.

18. To adjust, release the adjusting screw by turning the locking screw slightly. Make the adjustment by turning the adjusting screw, then lock in place with the lock screw. See separate Magneto instructions. If you replace, remember to lubricate the felt washer on the Wico Magneto. BE SURE TIMING MARKS ARE LINED UP when you make this adjustment!

19. If the Spark you get is very red, instead of blue or yellow-white, it is probably the condenser. A bad condenser will usually allow the Engine to start, but the Engine will backfire and spit, and quit. If

there is no spark at all, it is usually the Coil.

20. To replace the Coil, Condenser, or do any other work on the Magneto, it is best to remove the Magneto from the Tractor.

21. To remove, turn the Engine over by hand until the Timing Marks are lined up. DO NOT MOVE THE ENGINE UNTIL YOU HAVE REPLACED THE MAGNETO. When You are ready to replace the Magneto, line the Timing Marks on the Magneto and replace it. The engine will be Timed the same as it was when you removed the magneto.

22. Loosen the Bolts from the bottom mounting, and remove the magneto, pulling straight back (away from engine) so as to not disturb the Timing.

23. If the Magneto is furnishing a strong Spark, and all other factors mentioned are correct, then the difficulty is probably in the timing. See "Timing Model L Engine").

UNUSUAL FAILURES

24. Clogged Gas Line: You can usually spot this by observing the carburetor.

25. Air pocket in the Gas line: Occasionally, when a User runs completely out of gas and refills the tank, a "pocket" of air is trapped in the system. If the Engine is not getting gas, observe the Sediment Bowl. If it is full, there is no air pocket. If the Sediment Bowl gas level is down slightly, the air pocket is present. To correct, unscrew the nut that holds the glass bowl enough to break the vacuum in the system. The Bowl will fill, and you have corrected the condition.

26. A build-up of mud or dirt on the Magneto Stop Button, or a bending of the Button which keeps it in contact with the Magneto. This, of course, shorts out the Magneto and allows no sparks to reach the Engine.

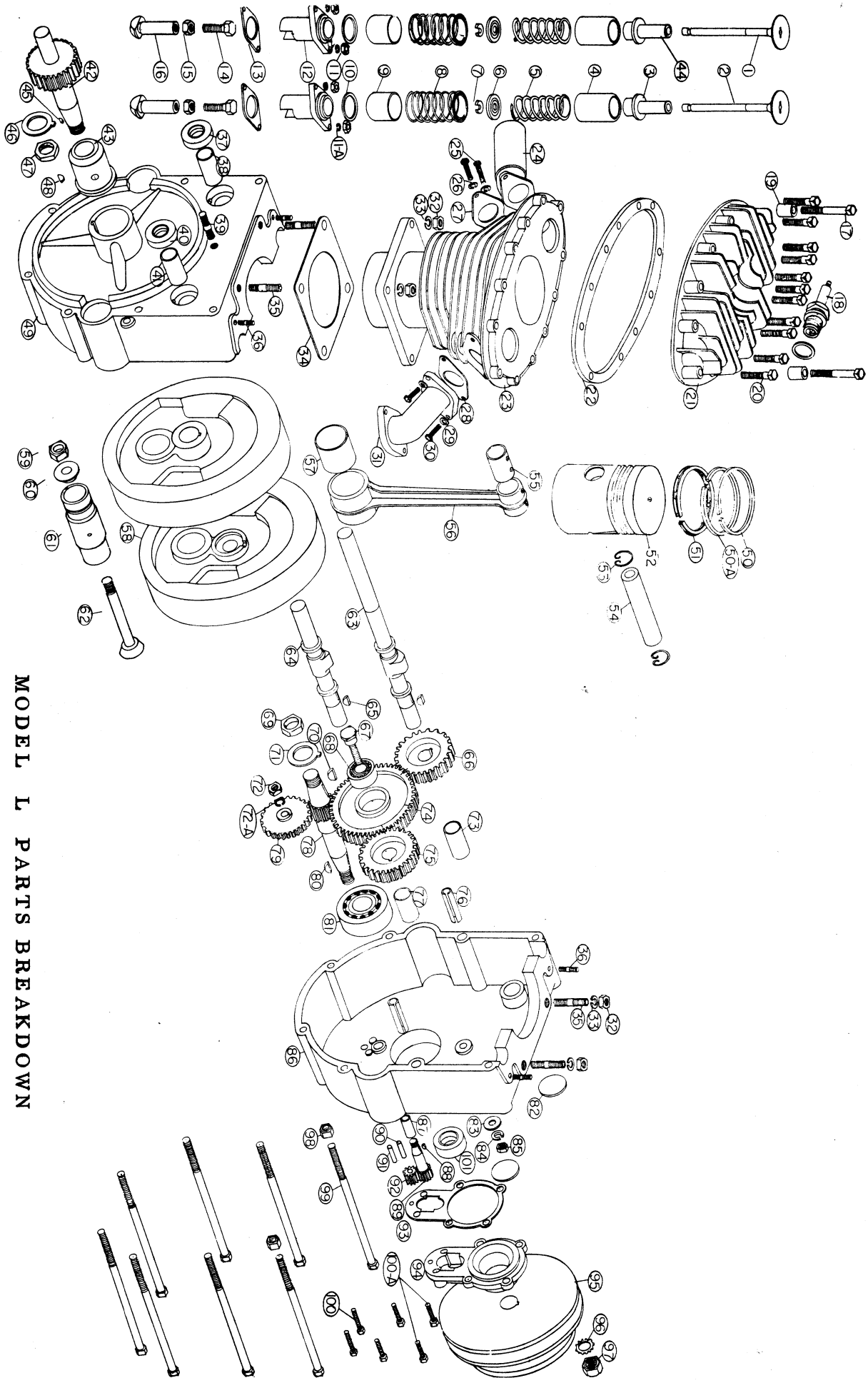
27. Very rarely a User forgets to replace the cap on the Magneto connection to the Spark Plug, and coincidentally the hood will be bent down. This will short the Magneto out also.

28. Carburetor adjustment may cause hard starting, but rarely causes a tractor not to start at all. Usually the tractor will run, even if adjustment is off. See "Carburetor Instructions".

OTHER GRAVELY MODEL L TRACTOR SPECIFICATIONS (ENGINE)

Year First Produced	1937-39
Number of Cylinders	1
How Cast	Single
How Set	Vertical
Cylinder Sleeves	Non-removable
Compression Ratio	5-1
*Size of Spark Plug	7/8
Regular or Extension Plug	Regular
Number Compression Rings to Piston	2
Number Oil Rings to Piston	1
Oil Ring Groove Width	5/32
Valve Arrangement	T-head
Diameter Inlet Valve Openings	1-5/8
Number of Crankshaft Bearings	1
Length Crankshaft Bearings (Total)	1-7/8
Carburetor Size	3/4
Cooling Method	Air
Fuel Recommended	Gasoline
Make of Governor	Pierce (optional)
Type of Governor	C
Weight of Motor	80
RPM of Motor at 1000 fpm Piston Speed	1710
Model L Ratio of Engine to Drive Wheels	
HIGH	31.2--1
LOW	43.68-1
TO POWER TAKE OFF	
HIGH	2---1
LOW	2.8-1

* Recommend Auto-Lite TT-10



MODEL L PARTS BREAKDOWN

MODEL "L" PARTS LIST - EXPLODED VIEW

Photo No.	Part No.	Description
1.	L-311-X	Valve, Exhaust
2.	L-311-N	Valve, Intake
3.	5737-N	Valve Guide
4.	L-315	Upper Spring Sleeve
5.	L-312	Valve Spring
6.	5741	Valve Spring Cap
7.	7542	Valve Spring Cap Key
8.	L-318	Sleeve Spring
9.	L-316	Lower Spring Sleeve
10.	L-319	Sleeve Gasket
11.	202-N	Plunger Guide Stud Nut
11-A.	305-W	Lock Washer
12.	L-403	Valve Plunger Guide
13.	L-407-A	Valve Plunger Gasket
14.	L-408	Tappett Screw
15.	L-409	Tappett Lock Nut
16.	L-404	Valve Plunger
17.	155-S	Deflector Bolt
18.	1709	Spark Plug
19.	L-840	Deflector Spacer
20.	154-S	Cylinder Head Bolt
21.	5734	Cylinder Head
22.	5735	Cylinder Head Gasket
23.	5733	Cylinder
24.	L-301-D	Exhaust Manifold
25.	164-S	Manifold Bolt
26.	303-W	Manifold Bolt Lock Washer
27.	L-407-B	Manifold Gasket
28.	L-301-B	Zenith Carburetor Gasket
29.	303-W	Manifold Bolt Lock Washer
30.	164-S	Manifold Bolt
31.	L-301-A	Manifold, Intake
32.	206-N	Cylinder Stud Nut
33.	305-W	Cylinder Stud Lock Washer
34.	L-317	Cylinder Bottom Gasket
35.	L-303	Cylinder Mounting Stud
36.	L-405	Plunger Guide Stud
37.	L-412	Camshaft Oil Seal
38.	L-406-I	Camshaft Bearing Bushing
39.	L-118	Crankcase Stud
40.	L-412	Camshaft Oil Seal
41.	L-406-I	Camshaft Bearing Bushing
42.	L-109	Drive Pinion Shaft
43.	L-114	Drive Pinion Bearing
44.	5737-X	Valve Guide, Exhaust
45.	504-K	Drive Pinion Shaft Key
46.	L-113	Flywheel Nut Lock
47.	L-112	Flywheel Nut
48.	503-K	No. 6, Woodruff Key
49.	L-101-2	Crankcase
50.	LH-548	Compression Ring, Chrome
50-A.	LH-547	Compression Ring
51.	LH-546	Oil Ring
52.	LH-543	Piston, Standard
53.	LH-545	Piston Pin Lock
54.	LH-544	Piston Pin
55.	L-306-A	Connecting Rod Bushing, Small
56.	L-306	Connecting Rod
57.	L-306-B	Connecting Rod Bushing, Large
58.	L-104	Flywheel
59.	210-N	Spreader Bolt Nut
60.	L-107	Spreader Bolt Washer
61.	L-105	Crank Pin
62.	L-106	Spreader Bolt
63.	L-402	Exhaust Camshaft
64.	L-401	Intake Camshaft
65.	503-K	Camshaft Gear Key
66.	L-413	Camshaft Gear
67.	L-417	Bearing Stud
68.	L-416	Idler Gear Bearing
69.	L-112	Flywheel Nut
70.	504-K	Drive Pinion Shaft Key
71.	L-113	Flywheel Nut Lock
72.	215-N	Oil Pump Master Gear Nut
72-A.	305-W	Oil Pump Master Gear Lock Washer
73.	L-406-O	Camshaft Bearing Bushing
74.	L-415	Idler Gear
75.	L-413	Camshaft Gear
76.	L-120	Crankcase Dowel
77.	L-406-O	Camshaft Bearing Bushing
78.	L-110	Timing Pinion Shaft
79.	L-419-A	Oil Pump Drive Gear
80.	504-K	Flywheel Key
81.	L-115	Timing Pinion Bearing
82.	L-414	Expansion Plug
83.	403-W	Bearing Stud Nut Washer
84.	305-W	Lock Washer
85.	220-N	Bearing Stud Nut
86.	L-101-2	Crankcase
87.	L-420-B	Oil Pump Bearing Bushing
88.	507-K	Oil Pump Master Gear Key
89.	L-421	Oil Pump Master Gear
90.	L-423	Idler Gear Stud
91.	L-124	Bearing Cap Dowel
92.	L-422	Oil Pump Idler Gear
93.	L-125	Bearing Cap Gasket
94.	L-103	Bearing and Oil Pump Cap
95.	5745	Fan Drive Pulley
96.	309-W	Fan Drive Pulley Nut Lock
97.	218-N	Fan Drive Pulley Nut
98.	205-N	Fan Housing Bolt Nut
99.	L-116	Crankcase Bolt
100.	177-S	Bearing Cap Bolt, Long
100-A.	164-S	Bearing Cap Bolt
101.	L-126-A	Bearing Cap Double Seal

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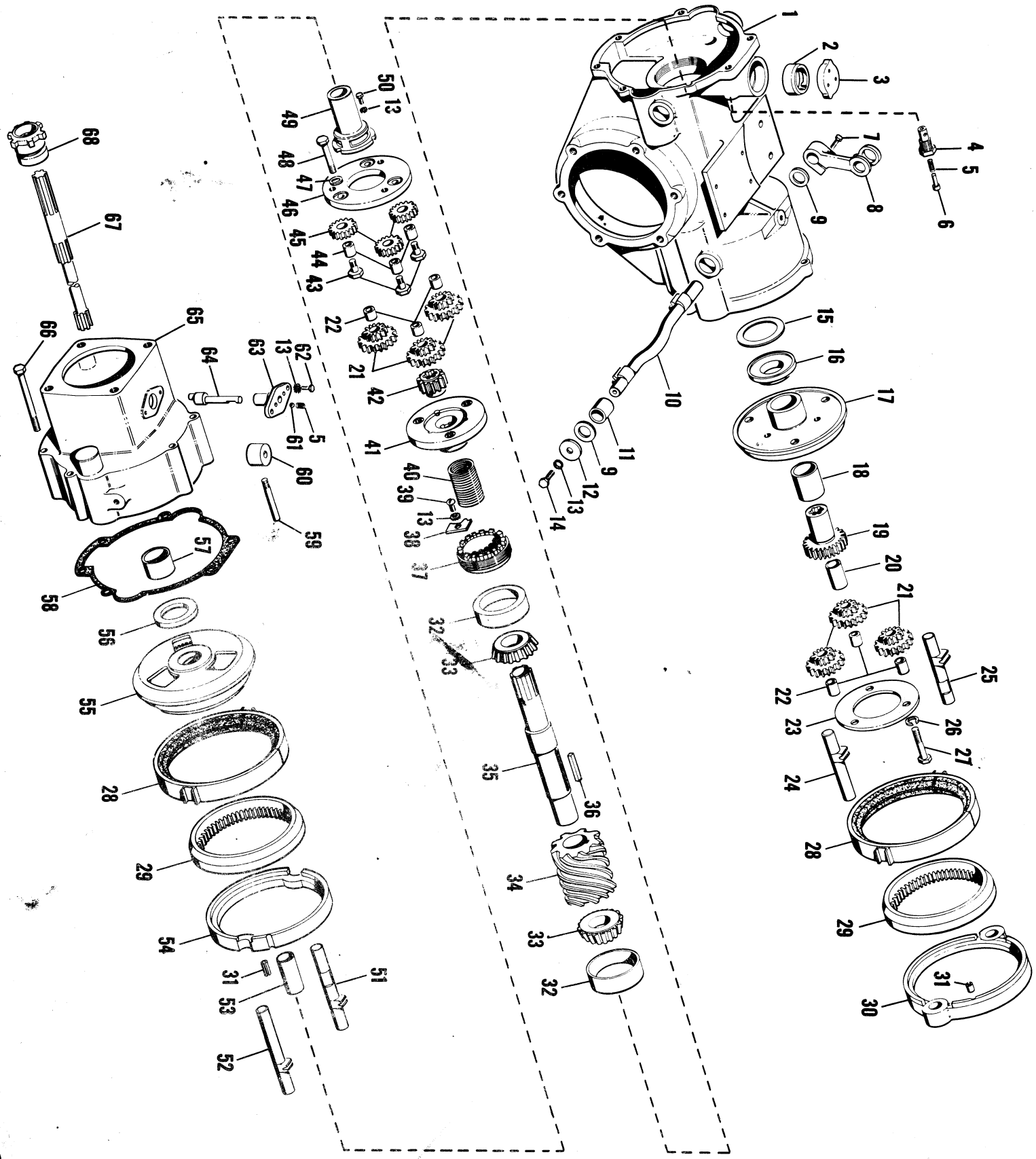
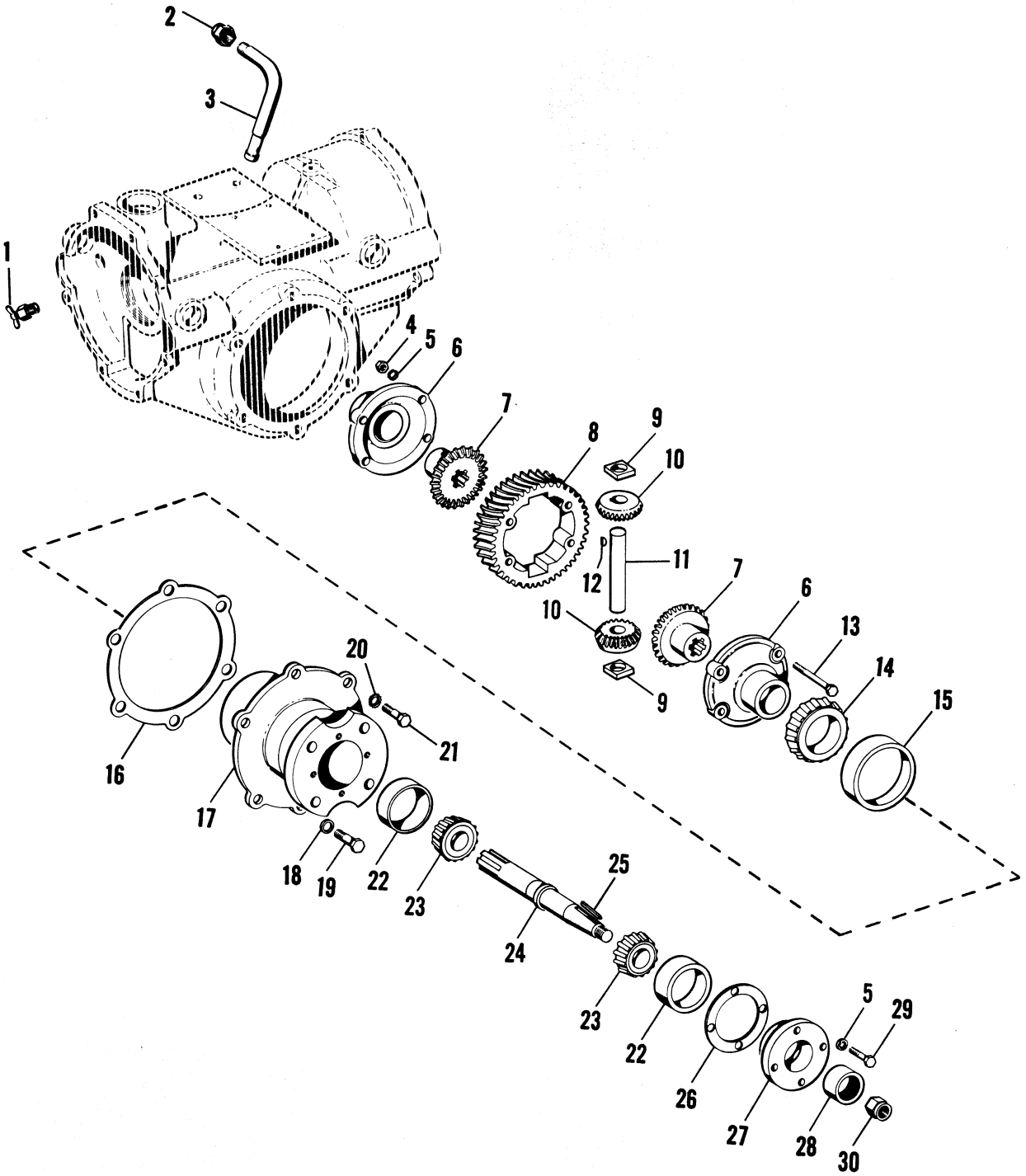
EXPLODED VIEW -- MODEL L CHASSIS



EXPLODED VIEW - PARTS LIST - MODEL L CHASSIS

No. Req.	Photo No.	Part No.	Description
1	1	L-201	Chassis casting
1	2	L-211	Chassis Oil filter neck
1	3	L-212	Chassis oil filter cap
1	4	L-815-A	Relief valve body
2	5	L-815-D	Spring .025"
1	6	L-815-B	Relief valve
2	7	154-S	Actuating lever clamp bolt
2	8	L-715	Actuating shaft lever
1	9	L-735	Thrust washer
2	10	L-712	Clutch actuating shaft
4	11	L-713	Actuating shaft bushing
2	12	L-736	Oil seal washer
8	13	303-W	Quill securing bolt washer
2	14	1655	Quill securing bolt
1	15	2211	Rear thrust plate shim (.020)
1	16	L-519	Rear thrust plate
1	17	L-506	Rear pin plate
1	18	L-535	Rear pin plate bushing
1	19	L-511	Sun gear
1	20	L-534	Sun gear bushing
6	21	L-513	Orbit gear
6	22	L-514	Orbit gear pin
1	23	L-515	Pin spacer
1	24	L-711R	Clutch slide rod, short
1	25	L-711L	Clutch slide rod, short
3	26	305-WL	Spacer lockwasher
3	27	L-516	Spacer bolt
2	28	L-517	Clutch cup
2	29	L-501	Internal gear
1	30	L-524	Rear spacer
2	31	HE-106	Roll pin
2	32	L-522R	Worm shaft bearing, cup
2	33	L-522C	Worm shaft bearing, cone
1	34	L-601	Standard worm (4, 6 or 8)
1	35	L-521	Worm shaft
1	36	L-608	Worm key
1	37	L-507	Bearing adjusting nut
1	38	L-523	Adjusting nut lock
1	39	107-S	Lock screw
1	40	L-547	Pin plate spacer
1	41	L-505	Front pin plate
1	42	L-510	Sun pinion
3	43	L-542	Reverse idler bolt
3	44	L-541	Reverse Idler bushing
3	45	L-540	Reverse idler
1	46	L-539	Front pin spacer
3	47	305-W	Spacer lockwasher
3	48	L-516	Spacer bolt
1	49	L-536	Pin plate quill
3	50	191-S	Quill securing bolt
1	51	710-L	Clutch slide rod, long
1	52	710-R	Clutch slide rod, long
1	53	L-546	Pinion shaft bearing
1	54	L-508	Gear cup
1	55	L-538	Reverse cone
1	56	L-520	Front thrust plate
1	57	L-532	Quill bearing
1	58	L-209	Chassis front gasket
1	59	L-732	Shipper shaft lever
1	60	L-733	Locator body
1	61	1809	Locator ball
2	62	L-164S	Shipper shaft guide bolt
1	63	L-734	Shipper shaft guide
1	64	L-545	Shipper shaft
1	65	L-202	Advance casting
6	66	L-207	Advance casting bolt
1	67	L-543	Pinion shaft
1	68	L-544	Clutch dog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MODEL L CHASSIS (CONT'D) PARTS LIST

No. Req.	Photo No.	Part No.	Description
1	1	L-214	Oil level try cock
1	2	L-822	Oil strainer body
1	3	L-823	Oil strainer nut
4	4	204-W	Nut
12	5	304-W	Bearing cap lockwasher
2	6	L-205	Differential housing
2	7	L-604	Bevel gear
1	8	L-602 (4, 6 or 8)	Standard worm gear
2	9	L-607-K	Driving block (with keyway)
2	10	L-603	Bevel pinion
1	11	L-605	Pinion pin
1	12	501-K	Pinion pin key
4	13	L-206	Differential housing bolt
2	14	RB-111-C	Differential bearing cone
2	15	RB-111-R	Differential bearing cup
2	16	L-220	Gasket
2	17	L-203-D	Axle housing
1	18	L-213	Washer
1	19	123-S	Axle housing drain bolt (nylon)
11	20	208-W	Lock washer
11	21	122-S	Axle housing bolt
4	22	RB-110-R	Axle bearing (cup)
4	23	RB-110-C	Axle bearing (cone)
2	24	L-611	Axle
2	25	L-615	Axle key
	26	L-219	Shim (as required)
2	27	L-204-D	Bearing cap
2	28	L-221-A	Bearing cap oil seal (double)
8	29	126-S	Bearing cap bolt
2	30	227-N	Axle nut

PROPER PROCEDURE FOR CHANGING WORM AND WORM GEARS FROM ONE GEARING SPEED TO ANOTHER

The method of changing the Gearing from High to Medium or Low speed is given below. We estimate that the average mechanic can accomplish this job in about one and one-half to two hours.

1. Remove Front Handle Bolts.

2. Take out Advance Casting Bolts. Tap on Lug behind Advance Casting firmly, while pulling on the Advance Casting. The Casting will slip off.

3. Remove entire Pin Plate Assembly.

4. Take both Axle Housings Off.

5. This releases Differential. At this point, change old Bronze Gear to new Bronze Gear by taking out the four bolts, re-assemble Differential.

6. Remove Actuating Shaft.

7. Working through the front of the Advance Casting, use a punch or screwdriver to knock the Big Castellated Nut loose, after which you can unscrew it by hand.

8. Working through the Axle Housing opening, use a small (1/8" thick or less) screwdriver or punch, and gently tap out the RACE of the front Bearing. DO NOT TAP ON THE BEARING ITSELF! TAP ONLY THE RACE.

9. After the Race is removed, the entire Shaft and Worm will come out the front by pulling on it by hand.

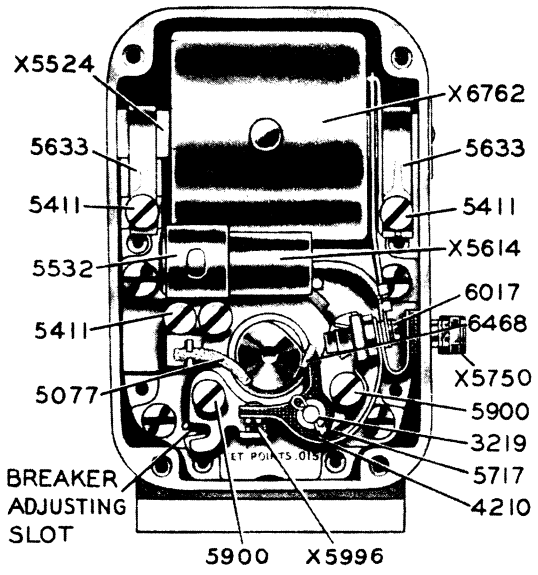
10. WORM AND SHAFT ASSEMBLY!
Note: It takes 10 ton pressure to press Worm to Shaft. Therefore we recommend that you order these parts as an assembly from the factory. BE SURE to specify Worm and Shaft ASSEMBLY, when you order. Order parts for speed desired as shown below:

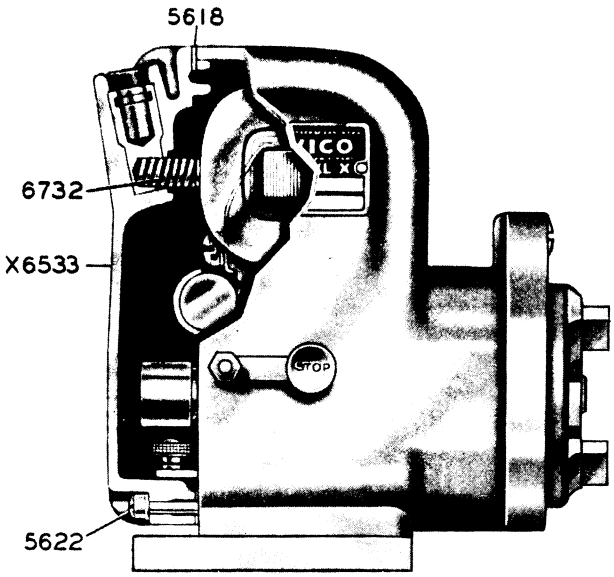
Part Number	Description	List Price
L-601-4	Slow Speed Worm	$ 8.25
L-601-6	Intermediate Speed Worm	8.25
L-601-8	Regular Speed Worm	8.25
L-521	Worm Shaft	4.12
L-602-4	Slow Speed Worm Gear	17.25
L-602-6	Intermediate Worm Gear	17.25
L-602-8	Regular Speed Worm Gear	17.25
L-608	Worm Shaft Woodruff Key	.05

11. Press Bearings on Worm Shaft, Reassemble. Be sure Shaft turns freely.

12. Reassemble all parts in Reverse order.

SERVICE PARTS LIST
For
Wico Magneto Specification XH-2049





SERVICE PART LIST

Part No.	Part Name
3219	Breaker arm pivot washer
4210	Breaker arm lock
5077	Cam wiper felt
5411	Condenser clamp screw
5411	Coil core clamp screw
X5524	Coil core group
5532	Condenser bracket
X5614	Condenser group
5618	Cover gasket
5622	Cover screw
5633	Coil core clamp
5717	Breaker contact aligning washer
X5750	Ground connection unit
5900	Fixed contact clamp screw
X5996	Breaker contact set (Includes fixed contact, breaker arm)
6017	Breaker spring clamp screw
6468	Breaker arm felt
X6533	Cover unit
6732	Coil contact spring
X6762	Coil group

PRINTED IN USA

SERVICE INSTRUCTIONS
For
Wico Magneto Specification XH-2049

TIMING

The magneto is properly timed to the engine at the factory. If it becomes necessary to retime the magneto to the engine, refer to the instructions in the engine instruction book.

LUBRICATION

The only lubricating point in the magneto is the cam wiper felt, 5077. This felt, which lubricates the breaker arm at point of contact with the cam, should be replaced whenever it is necessary to replace the breaker contacts.

IMPORTANT

Incorrectly adjusted spark plug gaps cause magneto failure more frequently than any other condition.

Spark plugs should be inspected at frequent intervals, the size of the gap should be carefully checked and adjusted and the plugs thoroughly cleaned.

All oil, grease, and dirt should frequently be wiped off the magneto, lead wires, and spark plug insulators. Keeping these parts clean and the spark plugs properly adjusted will improve the engine performance and at the same time will prolong the life of the magneto.

MAGNETO COVER

The magneto cover, X6533, can be removed by loosening the four screws, 5622, which hold it in place. When replacing the cover be sure that the cover gasket, 5618, is in its proper place.

BREAKER CONTACTS—REPLACEMENT AND ADJUSTMENT

The breaker contacts should be adjusted to .015" when fully opened. To adjust the contacts, loosen the two clamp screws, 5900, enough so that the contact plate can be moved.

Insert the end of a small screw driver in the adjusting slot and open or close the contacts by moving the plate until the opening is .015", measuring with a feeler gauge of that thickness, tighten the two clamp screws.

To replace the contacts remove the breaker, the spring clamp screw, 6017, the breaker arm lock and washer, 3219, and 4210, then lift the breaker arm from its pivot. Remove the spacing washer, 5717, and the two breaker plate clamp screws, 5900. The breaker plate can then be removed.

If the contacts need replacing it is recommended that both the fixed contact and the breaker arm be replaced at the same time, using replacement breaker set X5996.

After assembly the contacts should be adjusted as described above. The contacts should be kept clean at all times. Lacquer thinner is an ideal cleaner for this purpose. Use WICO tool S-5449, to adjust the alignment of the contacts so that both surfaces meet squarely.

CONDENSER

To remove the condenser, X5614, first disconnect the condenser lead by removing the breaker arm spring screw, 6017, then remove the two condenser clamp screws, 5411, and the condenser clamp 5532. When replacing the condenser make sure it is properly placed and that the clamp screws are securely tightened.

COIL AND COIL CORE

The coil and coil core must be removed from the magneto housing as a unit. Disconnect the primary wire from the breaker arm spring terminal by removing screw, 6017, take out the two coil core clamp screws, 5411, and remove the clamps 5633. The coil and core can then be pulled from the housing. When replacing this group make sure that the bare primary wire is connected under the core clamp screw and that the insulated wire is connected to the breaker arm spring terminal.

REMOVAL OF COIL FROM CORE

The coil X5700, is held tight on the core, X5524, by two wedges, 10383. It will be necessary to press against the coil core with considerable force to remove it from the coil. The coil should be supported in such a way that there is no danger of the primary of the coil being pushed out of the secondary.

When replacing the coil on the coil core, slide it on then press in the two coil wedges, one on each end, until they are flush with the primary of the coil.

ZENITH 161 7

CARBURETOR NO. 9995

OPERATION AND SERVICE

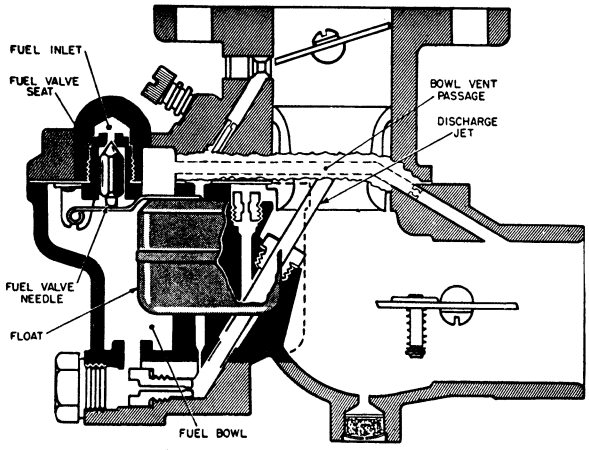
The Zenith 161-7 carburetor is of updraft single venturi design. It is made in 7/8" S. A. E. barrel size; with 7/8", S. A. E. flange size. It is made with selective fuel inlet, without a back suction economizer, and a main jet adjustment.

It is "balanced" and "sealed", and the semi-concentric fuel bowl allows operation to quite extreme angles without flooding or starving.

FUEL SUPPLY SYSTEM

The fuel supply system is made up of the threaded fuel inlet, the fuel valve seat, fuel valve, float and fuel bowl.

The fuel supply line is connected to the threaded inlet. The fuel travels through the fuel valve seat and passes around the fuel valve and into the fuel bowl. The level of the fuel in the fuel chamber is regulated by the float through its control of the fuel valve. The fuel valve does not open and close alternately but assumes an opening, regulated by the float, sufficient to maintain a proper level in the fuel chamber equal to the demand of the engine according to its speed and load.



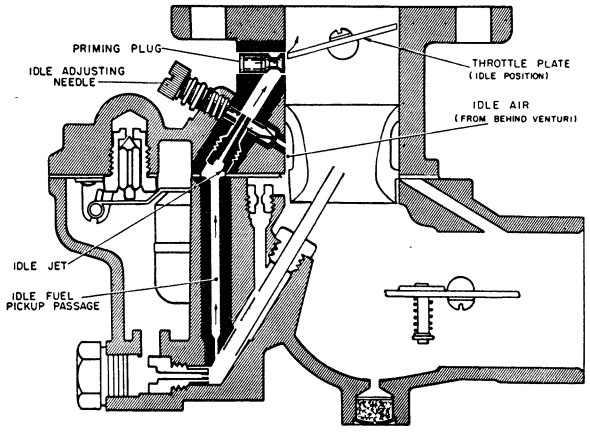
FUEL SUPPLY SYSTEM

The inside bowl vent as illustrated by the passage originating in the air intake and continuing through to the fuel bowl, is a method of venting the fuel bowl to maintain proper air fuel mixtures even though the air cleaner may become restricted. This balancing is frequently referred to as an "inside bowl vent".

IDLE SYSTEM

The idle system consists of the idle discharge port, idle air passage, idle adjusting needle, idle jet, and fuel passage.

The fuel for idle is supplied through the main jet to a well directly below the main discharge jet. The pick-up passage is connected to this well by a restricted drilling at the bottom of this passage. The fuel travels through this channel to the idle jet calibration. The air for the idle mixture originates back of (or from behind) the main venturi. The position of the idle adjusting needle in this passage controls the suction on the idle jet and thereby the idle mixture. Turning the needle in closer to its seat results in a greater suction with a smaller amount of air and therefore a richer mixture. Turning the needle out away from its seat increases the amount of air and reduces the suction, and a leaner mixture is delivered. The fuel is atomized and mixed with the air in the passage leading to the discharge port (or priming plug) and enters the air stream at this point.



IDLE SYSTEM

HIGH SPEED SYSTEM

(Illustration--Page 9)

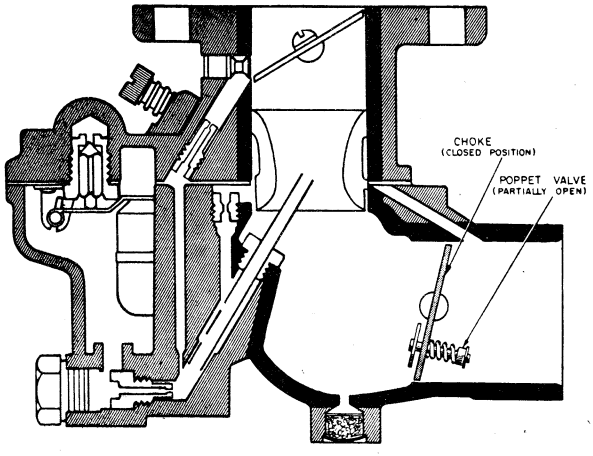
The high speed system controls the fuel mixture at part throttle speeds and at wide open throttle. This system consists of a venturi, controlling the maximum volume of air admitted into the engine; the main jet, which regulates the flow of fuel from the float chamber to the main discharge jet; the well vent, which maintains uniform mixture ratio under changing suction and engine speeds; and a main discharge jet, which delivers the fuel into the air stream.

The main jet controls the fuel delivery during the part throttle range from about one-quarter to full throttle opening. To maintain a proper mixture ratio a small amount of air is admitted through the well vent into the discharge jet through the air bleed holes in the discharge jet at a point below the level of fuel in the metering well.

The passage of fuel through the high speed system is not a complicated process. The fuel flows from the fuel chamber through the main jet and into the main discharge jet where it is mixed with air admitted by the well vent, and the air-fuel mixture is then discharged into the air stream of the carburetor.

CHOKE SYSTEM

The choke system consists of a valve mounted on a shaft located in the air entrance and operated externally by a lever mounted on the shaft. The choke valve is used to restrict the air entering the carburetor. This increases the suction on the jets when starting the engine. The choke valve



CHOKE SYSTEM

is of a "semi-automatic" type, having a poppet valve incorporated in its design, which is controlled by a spring.

The poppet valve opens automatically when the engine starts and admits air to avoid over-choking or flooding of the engine. The mixture required for starting is considerably richer than that needed to develop power at normal temperatures. As the engine fires and speed and suction are increased, the mixture ratio must be rapidly reduced. This change is accomplished through adjustment of the choke valve and the automatic opening of the poppet valve to admit more air when the engine fires.

SERVICE AND REPAIR PROCEDURE

A. Identify Carburetor

(a) Check the numbers on metal identification disc riveted to top of float bowl cover against carburetor outline specification chart. The inside number next to the rivet is the Zenith outline assembly number and the one next to the outer edge of the disc is the vehicle manufacturer's.

B. Disassembled view

(a) The disassembled view will identify the various component parts and show their relation to assembly. Use the disassembled view with the identifying part number to identify and locate parts when performing the disassembly and reassembly operations.

C. Selection of Tools and Repair Parts Kit

(a) The use of the proper Zenith tools and the proper repair parts kits is essential if the best service and repair procedure is to be performed on the carburetor. The following list of Zenith special tools and general hand tools will best perform the service job.

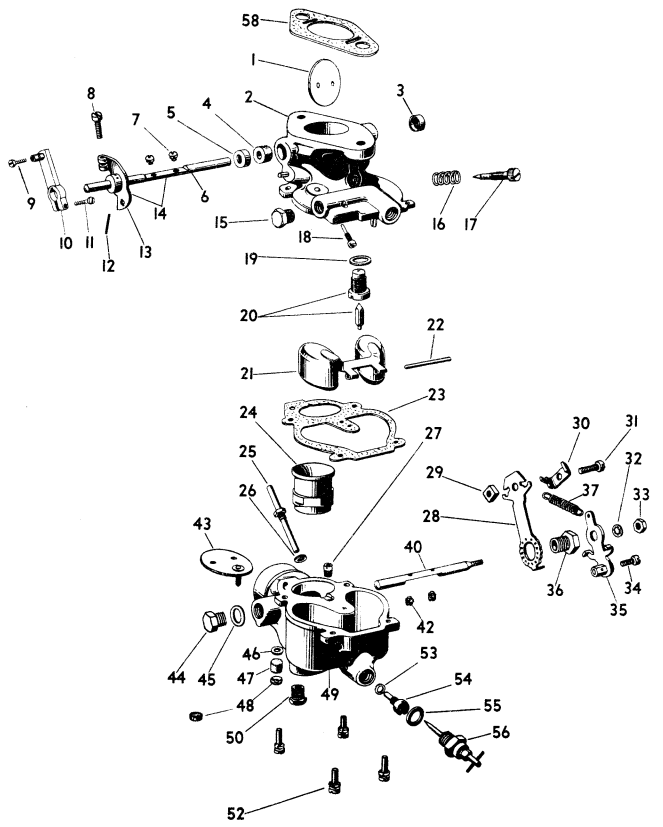
(b) Zenith Special Tools

C161-1	Main Jet Wrench
C161-10	Plug Wrench
C161-25	Main Discharge Wrench
C161-71-1	Line Reamer
C161-72-1	Bushing Driver
C161-73-1	Counter Bore Reamer
C161-82	Fuel Valve Seat Wrench
C161-83	Main Jet Wrench

(c) General Hand Tools

7/16" Open End Wrench
1/2" Open End Wrench
1/4" Blade Screw Driver
Long Nosed Pliers
6" Depth Gage
1/4" Round File
Light Hammer
Long Rod or Punch

(d) The basic repair parts kit for the 61 or 161 carburetor, except model 61A8SRD, is No. K501. A proper repair job cannot be performed, however, by using the basic kit as such. The basic kit must be "tailored" to fit the particular outline of the carburetor being serviced by the addition of the parts listed in large print on the label of the basic kit container.



D. Separate Carburetor Bodies

(a) Remove the four assembly screws (52) which attach the throttle body (2) to the fuel bowl (49) using a screwdriver.

(b) Separate the throttle body (2) from the fuel bowl assembly (49).

E. Disassemble Throttle Body

(a) Remove float axle as follows:
(1) Press screwdriver against float axle (22) at slotted side of float hinge bracket and force through hinge bracket.
(2) Remove float axle (22) completely with fingers from opposite side and remove float (21).

(b) Remove fuel valve needle (20).

(c) Remove the assembly gasket (23) from the machined surface of the throttle body (2).

(d) Remove the venturi (24).

(e) Remove the fuel valve seat (20) and fibre washer (19) from machined surface of throttle body (2) using Zenith Tool No. C161-82.

(f) Remove the idle jet (18) from passage in machined surface of throttle body (2) near fuel valve seat (20) using a small screwdriver.

(g) Remove the idle adjusting needle (17) and friction spring (16) from the side of throttle body (2).

(h) Remove the throttle plate (1), screws (7), shaft and stop lever assembly (14), throttle clamp lever (10), as follows:

(1) Unscrew throttle stop screw (8) until threaded end is flush with lever (13).

(2) Make match marks with file on throttle body (2) and all levers to act as a guide to reassemble these parts in the same position as removed.

(3) Loosen throttle clamp lever screw (11) and remove lever (10) from shaft (14).

(4) File off the riveted or peened end of the throttle plate screws (7).

NOTE: When such screws are riveted or peened the threaded end of the two screws must be filed flat before removal to avoid breakage or stripping of threads in the shaft. In some cases it may be necessary to use a small (1/4") round file and cut slightly below the surface of the shaft because of a slight counter bore around the screw hole.

Be sure to avoid striking and cutting the side of the throt-

tle body bore or throttle plate when filing the screws.

(5) Remove the screws (7) and pull out the throttle plate (1).

(6) Remove the throttle shaft and stop lever assembly (14) from the throttle body (2).

(i) Remove the throttle shaft packing (4) and packing retainer (5) from the throttle body shaft holes using a small screwdriver to pry out the retainer.

F. Disassemble Fuel Bowl Body

(a) Remove the main jet adjusting needle assembly (56) and fibre washer (55) from bottom of fuel bowl body (49) using a 1/2" wrench.

(b) Remove main jet (54) and fibre washer (53) from threaded passage in bottom side of fuel bowl (49) with Zenith Tool No. C161-1, or screwdriver.

(c) Remove main discharge jet (25) and fibre washer (26) from center of large opening in machined surface of fuel bowl (49) with Zenith Tool No. C161-25.

(d) Remove well vent jet (27) from center of large opening in machined surface of the fuel bowl (49) with a small screwdriver.

(e) Disassemble choke as follows:

(1) Remove the bracket spring (37) from the choke lever (35) and choke bracket (28).

(2) Make match marks with a file on air shutter bracket (28), air intake body (49) and lever (35) to act as a guide to reassemble these parts in the same position as removed.

(3) Remove the choke shaft nut (33) and lockwasher (32) using Zenith Tool No. C161-25.

(4) Remove the choke lever (35).

(5) Remove the choke bracket screw (36) using a 1/2" open end wrench and remove choke bracket (28).

(6) Remove the shaft hole plug (44) and fibre washer (45) using a 1/2" open end wrench.

(7) Remove the choke plate screws (42) and remove the choke shaft (40) and choke plate (43).

CLEANING AND INSPECTION OF PARTS

A. Cleaning Parts

(a) Clean all metal parts thoroughly with cleaning solution and rinse in solvent.

(b) Blow out all passages in the air intake and fuel bowl casting (49) and throttle body (2). NOTE: Be sure all carbon deposits have been removed from throttle bore and idle port. It is advisable to reverse flow of compressed air in all passages to insure that all dirt has been removed. Never use a wire or drill to clean out jets.

B. Inspection of Parts

(a) Float Assembly. Replace float assembly (21) if loaded with gasoline, damaged, or if float axle bearing is worn excessively. Inspect top side of float lever for wear where it contacts fuel valve needle. NOTE: Such wear **can affect the float level.**

(b) Float Axle. Replace if any wear can be visually detected on the bearing surface.

(c) Fuel Valve Seat and Needle Assembly. Always replace fuel valve seat and needle (20) because both parts wear and may cause improper float level.

(d) Idling Adjusting Needle and Spring. Inspect point of needle (17). This must be smooth and free of ridges.

(e) Throttle Plate. Inspect plate (1) for burrs or damaged edges. Never clean a throttle plate with a buffing wheel or sharp instrument.

(f) Choke plate (43). Inspect for bends, burrs or damaged edges.

(g) Choke Shaft. Check bearing surfaces for wear; see that shaft (40) is straight.

(h) Gaskets. Replace all gaskets and fibre washers every time the carburetor is disassembled.

(i) Throttle Shaft. Replace if throttle shaft (6) shows evidence of wear on the bearing surfaces.

(j) Check Specifications. Use the outline specification chart and verify the correctness of the following parts. Numbers shown on chart will be found on parts. The following calibrated parts should be checked: Venturi, Main Jet, Discharge Jet, Well Vent Jet, Idling Jet and Fuel Valve Seat.

REASSEMBLY

A. Fuel Bowl Body

(a) Choke Assembly

(1) Insert choke shaft (40) into air intake (49).

(2) Insert choke plate (43) into air intake (49).

NOTE: Be sure the choke plate (43) is located in the same position in the air intake (49) as regards the poppet valve as when it was disassembled.

(3) Install choke plate screws (42) using a small screwdriver.

(4) Install the shaft hole plug (44) and fibre washer (45) and tighten using a 1/2" open end wrench.

(5) Place the choke bracket (28) against the boss on the air intake (49) and install the choke bracket screw (36) and tighten with a 1/2" open end wrench.

(6) Place the choke lever (35) on the choke shaft (40) and tighten with the choke shaft nut (33) using Zenith Tool No. C161-25.

(7) Attach the choke lever spring (37) to the choke bracket (28) and the choke lever (35).

NOTE: Use the "Match Marks" put on the choke lever (35), choke bracket (28) and air intake body (49) during disassembly to properly align the choke assembly during reassembly.

(b) Install main discharge jet (25) and fibre washer (26) in fuel bowl (49) and tighten firmly with Zenith Tool No. C161-25.

(c) Install well vent jet (27) in fuel bowl (49) and tighten with a small screwdriver.

(d) Install main jet (54) and fibre washer (53) in large threaded passage beneath the fuel bowl (49) using Zenith Tool No. C161-1, or screwdriver.

(e) Install the drain plug (hex) in threaded passage bottom of fuel bowl using Zenith C161-10 wrench.

(f) Install main jet adjustment (56)

or 1/2" hex plug (57) as the case may be.

B. Throttle Body

NOTE: Any throttle body of a Zenith 161 Series carburetor can have throttle shaft bushings installed to return it to factory specifications as regards fit of the throttle shaft. If the fit of the throttle shaft is sloppy in the throttle body and it is desired to use the same throttle body for reassembly of the carburetor, then, it is absolutely necessary to install throttle shaft bushings. A poorly fitting throttle shaft upsets idling of the engine, for the throttle plate will not be correctly located in reference to the idle discharge port, and also it is possible for additional air to be admitted into the throttle body around the shaft which will also tend to upset the idle.

The following procedure should be adhered to to properly install throttle shaft bushings in the Zenith 161 Series carburetor.

(a) Install throttle shaft bushings as follows:

NOTE: To properly rebush the throttle body of the Zenith 161 Series carburetor, it is absolutely necessary to have available the proper counterbore reamer and line reamer and the bushing driver tool needed to install the new bushing. Counterbore reamer No. C161-73-1, line reamer No. 161-71-1, and bushing driver No. 161-72-1 are used. The bushing itself is CR9-13.

(1) Place a suitable center in the drill press bed, with one throttle shaft hole on this center bring the spindle down until the counterbore reamer contacts the opposite shaft hole. The reamer in this instance is of a diameter to result in a press fit for the outside diameter of the throttle shaft bushing.

(2) With the casting still in place as described in the above paragraph, set the stop on the press to the length of the bushing. This will give you the approximate setting of the spindle travel.

(3) The hole is then counterbored to accommodate the bushing.

(4) A throttle shaft bushing is driven into place using the proper bushing driver tool.

(5) And this bushing is then reamed with the line reamer. Use the opposite shaft hole as a "pilot" to "align" the line reamer in the bushing.

(6) Now turn the casting over and prepare the opposite hole to take the bushing. It will be necessary to reset the stops on the spindle again as described before. Then counterbore the hole.

(7) Drive the second throttle shaft bushing into position.

(8) Then ream the inside diameter as the final machining operation.

The casting is now ready for reassembly.

NOTE: A lathe may be substituted for the drill press in performing the counterboring and line reaming operations.

(b) Install the new throttle shaft packing (4) and retainer (5) in throttle body (2) as follows: Use bushing driver tool Zenith C161-72-1.

(1) Assemble packing (4) and retainer (5) and place completed assembly on bushing driver tool with packing facing small end of tool.

(2) Insert small end of tool into throttle shaft hole, start retainer (5) into counterbore in body (2) and lightly drive retainer (5) into body (2) until it is flush with machined surface. NOTE: The packing retainer (5) must be flush with machined surface or slightly below to avoid striking throttle lever (13).

(c) Install the throttle shaft and stop lever assembly (14), throttle plate (1), screws (7) as follows:

(1) Insert the throttle shaft and stop lever assembly (14) in throttle body (2).

(2) Rotate throttle shaft (6) to wide open position, insert throttle plate (1) and rotate to closed position holding the plate in position with fingers.

(3) Start throttle plate screws (7) and tighten with small screwdriver, being sure that the throttle plate (1) is properly centered in the throttle body bore.

NOTE: The screw holes in the throttle plate are off center. Start the side of the throttle plate with the shortest distance between the screw holes and beveled edge into the shaft first. The throttle plates are made with two opposite edges beveled to fit the throttle body bore when the plate is closed. The throttle plate will not close tightly if installed upside down. To properly center the plate in the throttle body bore, the screws should be started in the shaft and then with the plate closed, it should be tapped on the mounting flange side. Pressure on the plate must be maintained with the finger until the screws are tightened. When properly installed, the side of the throttle plate farthest away from the mounting flange will be aligned with the idle port when the plate is closed.

(d) Install throttle clamp lever in same position as removed. Refer to match marks placed on lever and throttle body during disassembly step.

(e) Install idle adjusting needle (17) and friction spring (16) in threaded passage on side of throttle body (2). Seat lightly with screwdriver and back out 1 1/4 full turns.

(f) Install idle jet (18) in counterbored passage in machined surface.

(g) Install fuel valve seat (20) and fibre washer (19) using Zenith Tool No. C161-82.

(h) Place new throttle body to fuel bowl gasket (23) on machined surface of fuel bowl cover (2).

(i) Install fuel valve needle (20) in seat (20) followed by float (21) and float axle (22).

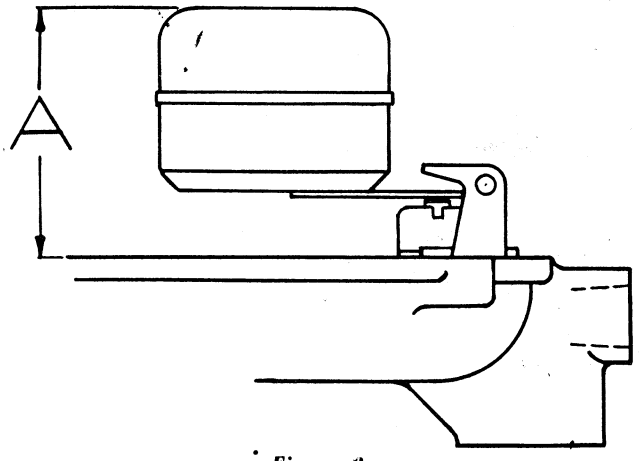


Figure 8

The "A" demension should be 1 5/32" plus or minus 3/64".

(j) Float Level. Check position of float assembly for correct measurement to obtain proper float level using a depth gage. Obtain float setting measurement from outline specification chart. NOTE: Do not bend, twist or apply pressure on the float bodies.

(1) With bowl cover assembly (2) in an inverted position, viewed from free end of float (21) the float bodies must be centered and at right angles to the machined surface. The float setting is measured from the machined surface (no gasket) of cover to top of side of float bodies at highest point.

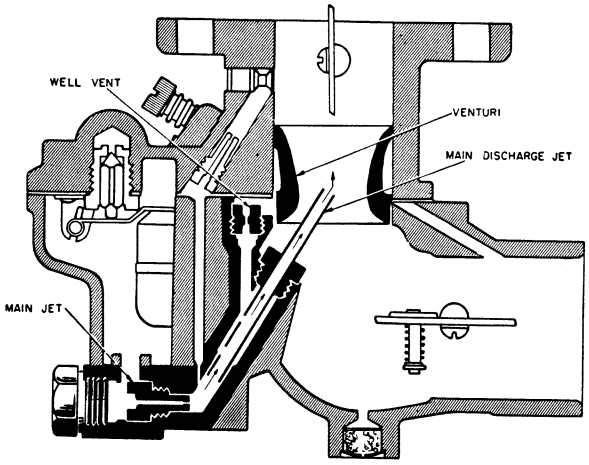
(2) Bending Float Lever. To increase or decrease distance between float body and machined surface use long nosed pliers and bend lever close to float body.

(k) Insert venturi (24) in throttle body bore, large opening first.

C. Assemble Carburetor Bodies

(a) Assemble the two bodies (2 and 49) and four screws (52) and tighten screws evenly and firmly.

(b) Hold the throttle lever (13) in a closed position and turn the throttle stop screw (9) in until it just contacts the stop on body (2), then turn screw (9) in 1 1/2 additional turns.



HIGH SPEED SYSTEM

Illustration of High Speed System.

GRAVELY TRACTORS, INC.

DUNBAR, WEST VIRGINIA

June, 1956

Printed in U. S. A.

SERVICE PARTS LIST

ZENITH CARBURETOR DIVISION

REF. NO.	PART NUMBER	PART NAME	PRICE
1	C21-88	Plate--Throttle	$ .98
2	B12-9995A	Body--Throttle (Complete)	10.35
3	CR37-1 x 1	Plug--Shaft Hole	.06
4	CT57-4	Washer--Shaft Packing	.06
5	C131-4 x 2	Retainer--Shaft Packing	.06
6	C23-101	Shaft--Throttle	.86
7	T15B5-3	Screw-Throttle Plate	.06
8	TS8-10	Screw--Lever Stop	.06
9	T8S8-06	Screw--Lever Swivel	.06
10	C24-7H x 2	Lever & Swivel--Throttle Clamp	1.72
11	T8S10-9	Screw--Lever Clamp	.06
12	CT63-9	Taper Pin--Stop Lever	.06
13	CR28-103	Lever--Throttle Stop	.58
14	C29-977	Shaft & Stop Lever--Throttle	1.72
15	CT91-3	Plug--1/8" Pipe (Fuel Inlet)	.14
16	C111-9	Spring--Adjusting Needle	.14
17	C46-25	Needle--Idle Adjusting	.06
18	C55-22-12	Idle Jet	.69
19	T56-20	Washer--Fuel Valve Seat Fibre	.06
20	C81-17-35	Valve & Seat--Fuel	1.15
21	C85-28	Float	1.38
22	C120-4	Axle--Float	.14
23	C142-16	Gasket--Bowl to Body	.14
24	C38-51-17	Venturi	1.55
25	C66-50-2-40	Jet--Discharge	1.03
26	T56-52	Washer--Discharge Jet Fibre	.06
27	C77-18-20	Jet--Well Vent	.34
28	C109-2	Bracket--Choke	$ .52
29	T21S8	Nut--Clamp Screw	.06
30	C110-1	Clamp--Bracket Tube	.06
31	T1S8-10	Screw--Tube Clamp	.06
32	T45-8	Lockwasher--Shaft Nut	.06
33	T22S8	Nut--Choke Shaft	.06
34	T1S8-6	Screw--Swivel	.06
35	C106-2	Lever--Choke	.52
36	C140-2	Screw--Bracket Assembly	.06
37	C112-6	Spring--Choke Lever	.14
40	C105-60	Shaft--Choke	1.21
42	T15B5-3	Screw--Choke Plate	.06
43	C101-17	Plate--Choke	.69
44	C138-24	Plug--Choke Shaft Hole	.14
45	T56-23	Washer--Shaft Hole Plug Fibre	.06
46	CT52-7	Washer--Intake Drain	.06
47	CT57-12	Washer--Drain Felt	.06
48	CT93B-50	Retainer--Felt Washer	.06
49	B3-85A-8	Bowl--Fuel	7.01
50	CT91-3	Plug--1/8" Pipe (Bowl Drain)	.14
52	T1S10-10	Screw--Bowl to Body	.06
53	T56-24	Washer--Main Jet Fibre	.06
54	C52-6-25	Jet--Main	1.03
55	T56-23	Washer--Adjustment Fibre	.06
56	C71-21	Adjustment--Main Jet	1.26
57	T41-5	Lockwasher--Thro. Pla. Screw.	.07
58	T41-10	Lockwasher--Bowl to Body Screw	.07
59	T41-5	Lockwasher--Choke	.07
60	C181-66	Gasket Set (Complete)	.44
61	C63-174	Idle Channel Filter Tube	.24
62	K-525	Repair Kit	5.06
63	C73-24	Needle Only	.75
64	C108-42	Choke, Shaft & Lever Assy. (Hand)	1.60

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