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MANUAL PREVIEW

Oliver
Service Manual
HG

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Service Manual

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OLS-HG

Make: Oliver	Model: HG	Years Made: 1939 - 1951
Factory: Cleveland, Ohio, USA	Chassis: crawler	Wheelbase: n/a
Front tire: tracks	Rear tire: tracks	Weight: 3,200 lbs [1451 kg]
Length: 100 inches [254 cm]	Width: n/a	Height: n/a
Elec. Grounding: n/a	Elec. Charging Amps: n/a	Elec. Volts: n/a
Hitch Rear Type: n/a	Hitch Rear Lift: n/a	Fuel Capacity: 12 gal [45.4 L]
Hydraulics Type: n/a	Hydraulics Capacity: n/a	Hydraulics Pressure: n/a
Hydraulics Valves: n/a	Hydraulics Total Flow: n/a	Hydraulics Valve Flow: n/a
Steering: n/a	Brakes: n/a	New Price: n/a

Engine type: Hercules IXB3 vertical L-head	Cylinders: 4	Displacement: 133 ci [2.2 L]
Bore/Stroke: 3.25x4.00 inches [83 x 102 mm]	Compression: 6.67:1	RPM: 1700
Gross Power: n/a	Torque: n/a	Torque RPM: n/a
Net Power: n/a	PTO: n/a	Drawbar: n/a
Rear PTO: n/a	Rear RPM: n/a	Clutch: n/a
Cooling: liquid	Coolant: 12 qts [11.4 L] (original) 11 qts [10.4 L] (late)	Air Cleaner Type: Vortex
Oil Capacity: n/a	Oil Change: n/a	Fuel: gasoline
Transmission Type: n/a	Gears: 3 forward and 1 reverse	

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INSTRUCTION MANUAL

MANUAL PREVIEW

for

Model "HG"

CRAWLER TRACTOR

SERIAL NOS. 1GA000 UP

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THE OLIVER CORPORATION
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CLETRAC HG OLIVER OC-3

TIPS AFTER 25 YEARS OF HARD USAGE

If you happen to be a new owner of one of these cute little machines may I say welcome. I have owned and used several for over 25 years and the following should be a help to anyone with one of these machines.

I will start by listing the weak points of these tractors and then give helpful hints about repairs and parts sources.

After hundreds of hours of hard work the HG OC-3 is prone to have problems centered around the 10 mounting studs on the rear sprocket. The bolts and lock washers on the main hubs tend to loosen up or even break off. Any rebuild of these tractors must include a replacement of these studs and nuts with the strongest parts available. Grade eight or higher are recommended. I have, also found replacing the studs with Grade 8 cap screws of the proper length works well.

The nut holding the main bull gear in place should be tensioned properly and locked in place as shown in the manual. If it loosens up, it can cause a very expensive failure.

The main axle stub is press fitted into the rear bull gear extension housing and held in place with a 3 inch round plate and two HD cap screws at the back end. This same plate holds the lower track supports and takes a great deal of abuse. I recommend this plate which is made out of 1/4 inch stock be replaced with one made from 1/2 inch stock and longer grade 8 cap screws.

The main frame is prone to crack failure along its top web due to flexing between the engine and transmission.

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This cracking usually appears just ahead of the transmission mounting brackets within view of from the seat. It seems this

cracking is due to a flexing between the front and back of the tractor since the engine is hooked to the transmission by a short driveshaft. About the only permanent fix for this cracking is a total dismantling of the unit and welding of a heavy gusset inside the frame.

Another area to check is the four bolts holding the track frame supports to the side of the main frame. There is a lot of stress on these supports and the bolts must be tight. If they are stripped or broken they must be replaced. A good fix is to drill and tap oversize to 9/16 or 5/8 HD cap screws.

On tractors equipped with loaders or dozer units have a major problem with the pump drive. The hydraulic pump is driven off the front end of the crank shaft. The problem lies in the fact that the crank stub was not designed as a drive and is very weak. The constant vibration from the pump shaft leads to failure at this point which can be very costly if it end up ripping off the end of the crankshaft. This area should be checked very carefully especially if the unit is equipped as mentioned above.

The next area to look at are the stubs holding the axle extension housing. There are six stubs holding these housing to the transmission main case and after years are stress they start to loosen or even break off. They should be kept tight at all times

and replaced if broken. If replacement is required, it is a major job since in most cases the tractor must be torn down to get into this area. There was a short time I ran my tractor on only 2 of those 6 studs.

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The manual says fill the lower rollers and front idler with gear oil. I've found this stuff works OK when everything is new, but with wear and age regular HD bearing grease does a much better job because it stays in place. I have been using grease on one of my units for 8 years with little wear on my rollers.

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Next let's talk about tracks. When tracks are new, they work as they were designed to, but age changes all that. If you are throwing tracks, the only answer is usually new pins and bushings.

[Expensive but necessary] The parts are still available or were the last time I did a set of tracks.

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A final word on weak points is the fact that these tractors are geared quite high. High gear is way fast and low gear is not slow enough. This high ratio is not a problem when these units are used in row crop farming but can hurt when loader is attached. It[®] must be run at top RPM's to get any work out of them. This leads to heavy wear and tear on the whole unit. A gear reduction extra transmission was an option but they are fairly rare and nearly impossible to find. They mount between the engine and transmission and take the place of the drive shaft. If one is handy, a duplicate of this auxillary unit can be fabricated from scratch. I have built one and would gladly pass on tips on how to get started.

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Although the above seems to indicate many problems these are very good little tractors that have given me many hours of hard work and pleasure. The best way to deal with this or any old piece of equipment if one wants a reliable unit is to completely tear them

apart and repair or replace every part correctly. I've found trying to fix any old tractor half way is usually a waste of time and money.

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After owning my Oliver crawlers for nearly 20 years, I have out of a matter of necessity managed to find a source for most parts of importance. The following should help any owner get started in finding parts needed to keep these neat old tractors crawling along.

1. The whole track frame assembly, tracks, idlers, sprockets, and related lower end parts were used by several air track builders for many years up to the 1970s. Ingersol-Rand, Joy, Barber-Green, and Worthington are just a few of the companies who used Oliver OC-3 lower end parts for their Crawl-Air units. If you can find one of these worn out Air-Tracks, you will have all the parts you'll need to restore your bottom end. These Air-Drills spend most of their time drilling holes so the tracks get a minimum amount of wear. The only problem is most owners of this equipment know about the above and know what it's worth. If worst comes to worse, all the above parts are available brand new at your local Ingersol-Rand dealer. [BRING MONEY] A note here, only those who have operated one of these tractors with a new bottom can ever know true pleasure.

2. Clutch parts should be available at any good auto or tractor parts dealer if the counter man can read and knows his job. TIP: Always ask to talk to the oldest employee in the place. Young guys usually say I have no listing for a 1946 OC-3, I can't help you. The point here is the parts are available, it just may take a little persistence.

3. All the roller and ball bearings and seals can be found at any good industrial bearing supply house.

4. The engine is one of several model Hercules 4 cylinders in the IX series. Looking from the driver's seat the ID tag should

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be located on the right rear of the engine block. The IXA, IXB, and IXC are all basically alike except for bore size and accessories on the engine. An example is many of the early models have no water pump or starter while the later models come with both.

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After hundreds of hours of operation, I can say these Hercules are great little engines which can take just about anything you can dish out. But if it fails, what now? Since Hercules is still in business, parts are still available, if, as we said above, you can find them. Don't give up too easily. Most engine parts pistons, rings, bearings, valves, gaskets ect. can be purchased from engine rebuild shops or a good auto parts store such as NAPA. Again don't give up at the first, "I'm sorry I can't help you". If I had done that, there would have been many occasions when my machines would have been turned into scrap. A side note here: Hercules Engine Manuals can be obtained from Hercules Technical Publishing, C/O A.E. George Hercules Engine Co. Canton, OH. 1-216-454-5631. Don't forget when writing for help to any outside source to include a self addressed stamped envelope. This will increase your chances of getting an answer but won't guarantee it.

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5. All of these tractors use a standard WICO magneto for the ignition, and parts should be available at all parts houses.

6. The proper carburetor on all of these units is a Marvel-Schebler whose parts are again readily available at a good parts source.

7. The Differential on all these units was built for Cletrac and later Oliver by Clark Industrial Transmission. This basic transmission was also used in several other brand tractors.

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If you need any parts for them and haven't purchased the needed parts tractor, the best source is your local I-H CASE DEALER

(INDUSTRIAL). The case 310 and 310 B crawler used the same transmission. Most of the parts gears, bearings, ect., may be found here although I wouldn't guarantee it. One part you can get at Case is a new set of steering brake facings. I bought a set less than a year ago for about \$75.00, and they worked great.

8. If the universal joint, drive shaft should fail and parts to replace can not be found I have built a new one using parts bought from industrial supply houses. Double roller chain sprockets with 1 1/8 6 spline center can be welded up to make a nice modern replacement. If you need more help or information, drop me a note.

9. Any reliable radiator shop can fabricate a new radiator. from scratch if you have the original tanks.

That's about it for everything you ever wanted to know about Cletrac, Oliver HG, OC-3. I hope this little piece will help any one out there get started putting one of these tractors back in top shape. Knowing how to start and where to look makes anything rebuildable. Who knows maybe someday someone will say yea I'll sell it cheap. You know they don't make them anymore and you can't get parts. Try not to smile and jump up and down until your home alone.

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The OLIVER Corporation
CLETRAC TRACTORS
TRACTOR MODEL, SERIAL NUMBER SHEET

TRACTOR MODEL	YEARS BUILT	TRACTOR SERIAL NO. START	TRACTOR SERIAL NO. EXTENT	ENGINE MAKE	TYPE OF ENGINE	ENGINE MODEL	ENGINE SERIAL START	ENGINE SERIAL EXTENT
R	1916-1917	1	1000	Buda	Gas		Same as tractor	
H	1917-1919	1001	13755	Weidley	Gas		30001	43068
W (W12)	1919-1932	13756	30971	Weidley Cletrac	Gas		43069	52123
					Gas		101	19873
F	1920-1922	1	3000	Cletrac	Gas		Same as tractor	
20K	1925-1932	101	10207	Cletrac	Gas		6250	19884
30A (A30)	1926-1928	6	1421	Wisconsin	Gas	H	1212	3584
30B (B30)	1929-1930	1601	3057	Wisconsin	Gas	GT	1101	2563
40	1928-1931	101	1833	Wisconsin	Gas	Z	1388	2596
						ZT	1102	2680
55-40	1931-1932	1835	1889	Wisconsin	Gas	ZT	1102	2680
55	1932-1936	1890	3852	Wisconsin	Gas	ZT	1102	2680
100	1927-1930	50	158	Wisconsin	Gas	ET	1101	1179
15	1931-1933	76	11999	Hercules	Gas	00C	223630	Up
20C	1933-1936	12000	14547	Hercules	Gas	00C	223630	Up
AG	1936-1937	14548	20201	Hercules	Gas	00C	223630	245972
AG	1937-1942	2X0202	2X3398	Hercules	Gas	00C	223630	245972
*AG-6	1944-Up	3X0000	Up	Continental	Gas	F226-339	5300	Up
*AD	1937-Up	1200	Up	Hercules	Diesel	D00C	450005	Up
AD2	1937-1940	1N00	5N80	Buda	Diesel	4DT196 & 4DT212	2100	Up
BD Four Speed	1936-1939	1D00	4D236	Hercules	Diesel	DJX	800001	800508
						DJXB	800509	803207
						DJXC	803208	803259
*BD Six Speed	1939-Up	5D000	Up	Hercules	Diesel	DJXC	803260	Up
BD2	1937-1938	1P00	1P16	Buda	Diesel	6LD-275		
25	1932-1935	76	1372	Hercules	Gas	JXC	503495	538234
30G	1935-1936	1C00	2C79	Hercules	Gas	JXC	528240	553328
BG Four Speed	1937-1939	2C80	2C798	Hercules	Gas	JXC	553329	Up
BG Six Speed	1939-Up	3C000	Up	Hercules	Gas	JXD	936242	Up
*BGS	1944-Up	6C000	Up	Hercules	Gas	JXD	1471509	Up
40-30	1930-1931	76	399	Hercules	Gas	WXT	600002	601579
35	1932-1936	400	2835	Hercules	Gas	WXT	600002	601579
CG	1936-1942	2836	3246	Hercules	Gas	WXT	601580	
		5M000	5M608	Hercules	Gas	WXT	601580	602076
35D	1934-1935	10000	10217	Hercules	Diesel	DRX	380002	382586
40D	1935-1936	10218	10831	Hercules	Diesel	DRX	380002	382586
DD Four Speed	1936-1939	10832	11581	Hercules	Diesel	DRXB	380002	382586
		1L3000	1L4460	Hercules	Diesel	DRXB	380002	382586
*DD Six Speed	1939-Up	1L5000	Up	Hercules	Diesel	DRXB	382587	Up
DG Four Speed	1936-1939	1E00	5E86	Hercules	Gas	RXC	122685	Up
*DG Six Speed	1939-Up	7E00	Up	Hercules	Gas	RXC	122685	Up
EN (E31)	1934-1939	1800	18946	Hercules	Gas	00C	223630	Up
E38 Pre-Streamlined	1934-1936	7830	18318	Hercules	Gas	00C	223630	Up
E38 Streamlined	1936-1938	2H000	3H168	Hercules	Gas	00C	223630	Up
E42	1938-1942	5H000	5H604	Hercules	Gas	00C	223630	Up
E-62-68-76	1934-1941	1A00	5A330	Hercules	Gas	00C	223630	Up
EHG-62-68-76	1937-1941	1R00	8R52	Hercules	Gas	00C	223630	Up
ED-38-42	1938-1941	1AA00	9AA00	Hercules	Diesel	D00C	450005	450143
ED2-38	1937-1941	1S00	1S52	Buda	Diesel	4DT-196 & 4DT-212	2100	Up
ED2-42	1937-1941	5S00	6S80	Buda	Diesel	4DT-196 & 4DT-212	2100	Up
ED2-62-68-76	1937-1940	1T00	1T84	Buda	Diesel	4DT-196 & 4DT-212	2100	Up
EHD2-62-68-76	1938-1941	1V00	4V13	Buda	Diesel	4DT-196 & 4DT-212	2100	Up
80D	1933-1936	6000	6321	Hercules	Diesel	DHX	360000	360264
FD Four Speed	1933-1938	6322	6699	Hercules	Diesel	DHX	360265	Up
*FD Six Speed	1938-Up	8Y000	Up	Hercules	Diesel	DHXB	360265	Up
*FDLC	1941-Up	1HA000	Up	Cummins	Diesel	HB1SD		
30-60	1930-1932	113	409	Wisconsin	Gas	DT-3	1103	1243
						DT-4	5002	5642
80	1932-1932	420	499	Wisconsin	Gas	DT-4	5002	5642
80G	1932-1936	500	846	Hercules	Gas	HXE	320110	321603
FG Four Speed	1936-1938	1CA046	1CA054	Hercules	Gas	HXE	321603	Up
FG Six Speed	1938-Up	1CA500	Up	Hercules	Gas	HXE	321603	Up
GG (Twin Row) (General)	1939-1942	1FA000	1FA0164	Hercules	Gas	IXA-3	664000	682537
(Co-Op)		1FA1000	1FA6886	Hercules	Gas	IXK-3	682538	Up
*HG-31-42-68	1939-Up	1GA000	Up	Hercules	Gas	IXA-3	664000	682527
						IXK-3	682538	Up

*Items are present production tractors

Printed Feb. 1945

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			Wrench Tension.	13	100

*Special Equipment

"OLIVER CRAWLER" MODEL HG MAINTENANCE CHART

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VALVES



- | | | |
|---------------------|---------------------------|---------------------|
| 1. FUEL LINE | 5. WRENCH ON LOCK NUT | 9. TAPPET |
| 2. AIR CLEANER PIPE | 6. WRENCH ON TAPPET | 10. TAPPET LOCK NUT |
| 3. CARBURETOR | 7. WRENCH ON TAPPET SCREW | 11. TAPPET SCREW |
| 4. TAPPET COVER | 8. FEELER GAUGE | 12. VALVE SPRING |

recheck. Follow the procedure outlined above and adjust valves on Nos. 2, 4, and 3 cylinders, in the order named.

When replacing cover, make sure gasket is in good condition.

TAPPET REPLACEMENT - Valve tappets are mushroom type, made with a screw and lock nut to provide for adjustment of valve stem clearance. When installing new tappets, a check should be made to allow .001 inch clearance in cylinder block.

To replace, remove CAMSHAFT and OIL PAN. Tappets can now be removed from the bottom of cylinder block.

VALVE GRINDING - Drain COOLING SYSTEM. Remove air cleaner pipe, hood, fuel line, CARBURETOR, tappet cover, and cylinder head. Lift valve spring with suitable lifter and remove valve seat pin. Clean carbon from cylinder head, piston head, cylinder block, valves, and valve stems.



1. VALVE
2. VALVE GRINDER

Valve grinding is done by placing a small amount of suitable grinding compound on the face of the valve. A light coil spring, placed around the valve stem before it is inserted in cylinder block for grinding, will facilitate the work, as this will lift the valve from the seat as pressure of grinding tool is relieved. Grinding tool should be turned backward and forward and lifted from its seat to change its position.

When valves have been properly ground, valve face and seat will show a clean, even, dull-gray surface, with no pits. Before replacing valves, be sure all grinding compound has been washed away and valve stems are oiled.

Replace valves and adjust, as outlined under tappet adjustment.

TAPPET ADJUSTMENT - Run engine until hot. Shut off fuel and disconnect fuel line at carburetor. Remove air cleaner pipe, carburetor, and tappet cover, being careful not to damage gasket. Crank engine over until intake valve on No. 1 cylinder opens and closes and tappet has reached its lowest position. Both intake and exhaust valves on No. 1 cylinder can now be adjusted. Loosen tappet lock nut and, using a feeler gauge between tappet and valve stem, adjust to proper clearance, (hot): Intake .006 inch - exhaust .008 inch. Tighten lock nut and