

# LISTER

Model	No. Cyls.	Bore (in.)	Stroke (in.)	Displ. (cu. in.)
HR3, HRW3	3	4.25	4.50	191
HR4, HRW4	4	4.25	4.50	255
HR6, HRW6	6	4.25	4.50	382
HR6, HRWS6	6	4.25	4.50	382

All engines are four-stroke, vertical in-line, direct injection diesel engines. Crankshaft rotation is counter-clockwise at pto (flywheel end of engine). HR series engines are air cooled. The finned flywheel of HR3 models is the centrifugal cooling fan; cooling of other HR models is by an axial flow fan, belt driven from crankshaft. HRW series are liquid cooled using a water pump and radiator. HR6 and HRWS6 series engines are equipped with a turbo-charger.

Firing order is 1-3-2 for three cylinder engines; 1-3-4-2 for four cylinder engines; 1-5-3-6-2-4 for six cylinder engines.

## MAINTENANCE

### LUBRICATION

#### All Models

Lister recommends lubricating oils with API service classification of CC or CD. Straight mineral oils or oils of less detergency are not suitable. If operated with high load factor, in high air temperatures or if the sulphur content in the fuel exceeds 0.6%, API CD oils or equivalent are recommended. Oil change interval is every 250 hours operation with filter change at the same time.

If operating temperatures fall below 10°F., an SAE 10W weight oil is recommended. In temperatures between 10° to 85°F. use SAE 20-20W and above 85°F. use SAE 30 or 10W-40.

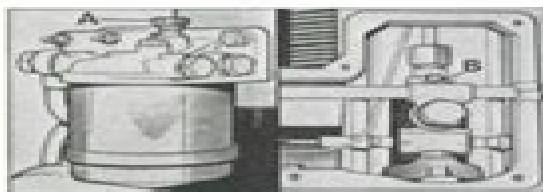


Fig. L1—On HR3 and HRW3 models, bleed screws are located at "A" on fuel filter body and "B" on fuel pump. Refer to text.

Crankcase capacities are as follows:

HR3, HRW3	13 qts.
HR4, HRW4	16 qts.
HR6, HRW6	21 qts.
HR6, HRWS6	21 qts.

### FUEL SYSTEM

#### All Models

**FUEL FILTER.** The life of a fuel filter depends on the amount of contamination it must remove from the fuel. If engine misfires or loss of power is evident, renew the filter. In any event, filter should be renewed every 1500 hours on HR3 and HRW3 models, and every 1000 hours on all other models.

**BLEED FUEL SYSTEM.** When fuel filter is removed or if engine runs out of fuel, bleed air from fuel system as follows: On HR3 and HRW3 models, refer to Fig. L1 and loosen bleed screw (A) on fuel filter body. Tighten screw when air-free fuel flows from bleed screw. Loosen each fuel pump bleed screw (B), one at a time, starting at pump nearest fuel filter. When air-free fuel flows from bleed screw, tighten screw and proceed to next pump.

On models equipped with C.A.V.-Mini-mec fuel pump, loosen bleed screw on

fuel lift pump until air-free fuel flows from bleed screw. Tighten bleed screw, then refer to Fig. L2 and loosen fuel pump bleed screw (A). Operate lift pump until air-free fuel flows, then tighten bleed screw. Loosen fittings on high pressure lines at injectors; open throttle and turn engine with starter until fuel flows from injector lines, then tighten fittings and start engine.

On models equipped with C.A.V.-D.P.A. pump, loosen bleed screw at filter body and operate lift pump until air-free fuel flows, then tighten bleed screw. Refer to Fig. L3 and loosen pump bleed screws (2, 3 and 4) in that order, one at a time. Operate lift pump and tighten bleed screw when air-free fuel appears. Loosen fittings on high pressure lines at injectors. With throttle open, turn engine with starter until fuel flows from injector lines. Tighten fittings and start engine.

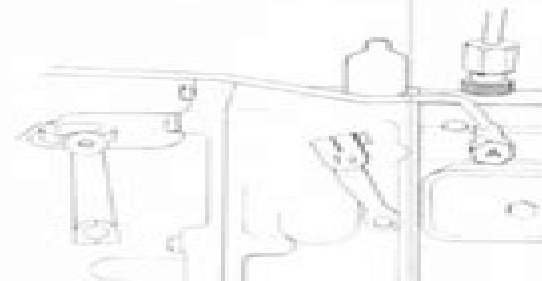


Fig. L2—On models equipped with C.A.V.-Mini-mec pump, loosen bleed screw "A" to bleed air from pump. Refer to text.



Fig. L3—On models equipped with C.A.V.-D.P.A. pump, loosen bleed screws 2, 3 and 4 in that order to bleed air from pump. Refer to text.

- |                                 |                            |
|---------------------------------|----------------------------|
| 1. Fuel inlet                   | 5. Speed control           |
| 2. Bleed screw                  | 6. Governor housing nut    |
| 3. Pump body bleed screw        | 7. Wipe lever              |
| 4. Governor housing bleed screw | 8. Fuel tank vent          |
|                                 | 9. Injector pressure pipes |
|                                 | 10. Timing belt cover      |

# Lister Bs 649 Service Manual

**CH Cherryholmes**

A red circular graphic with a gradient, appearing as a semi-circle or a partial circle, located to the right of the CH Cherryholmes text.

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