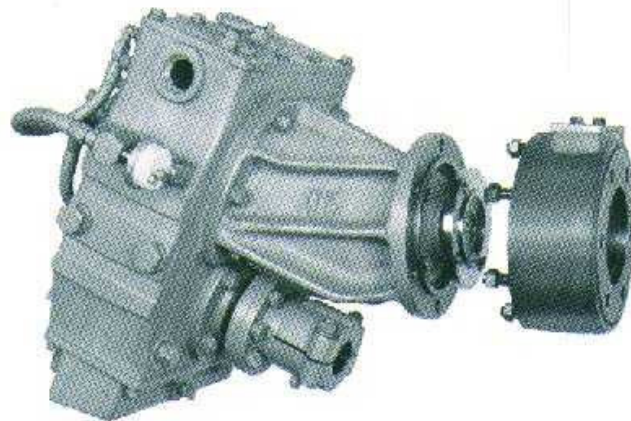


# **WALTER DIRECTLY MOUNTED V-DRIVES**

## **OWNER'S MANUAL**

### **Models RV-10D thru RV-50D**

- **More Space For Living Quarters and Cargo—** Placing engines in the stern saves space for living quarters and cargo space. Engine compartment becomes very compact and can be bulkheaded; reduces engine noise and fuel odors while increasing safety.
- **Better Performance—** Weight of engines in stern of boat allows boat to plane more easily. Floorboards and center of gravity can be lowered, resulting in a more stable boat design.
- **Reliable—Practically Maintenance Free—** V-Drives make it possible to use inboard engines on small cruisers. Eliminates costly maintenance and problems associated with I/O's which are constantly immersed in corrosive saltwater.



## **Advantages of WALTER V-DRIVES**

- 1 WIDE RANGE OF STANDARD RATIOS!** Up to 3:1 reduction available on most models. No need for reduction gear on transmission.
- 2 CHOICE OF V-ANGLES!** All independently mounted V-Drives can be supplied with a choice of 3 standard V-angles.
- 3 IDLER GEAR CHANGES ROTATION OF PROP SHAFT!** This option makes it possible to obtain twin screw rotation with same-hand engines. Walter V-Drives use a third gear to reverse rotation rather than potentially troublesome chains & sprockets.
- 4 HIGH QUALITY GEARS!** Only fully hardened, precision helical gears made of the finest alloy steel are employed in WALTER V-Drives. The gear teeth are cut, heat-treated, and precision ground or honed to an aircraft quality finish and accuracy for smooth and quiet operation. No other method of manufacturing can consistently produce a finer gear.
- 5 HIGH PROP THRUST CAPACITY!** Special anti-friction bearings and rugged tapered roller bearings are used.
- 6 REVOLUTIONARY DESIGN!** Specially coupled cardan-type needle bearing universal joints operate at equal angles for constant velocity. Fully enclosed; lubricated & cooled by lube system.
- 7 EXCEPTIONAL FLEXIBILITY!** Independently mounted models use self-aligning bearing, slidable splined connecting shaft and flex joint assembly to provide 2 points of flexibility, eliminate strain between engine and V-Drive.
- 8 HIGH CAPACITY WATERCOOLING!** A waterjacket or tubular oil cooler and filter cools each V-Drive. V-Drives equipped with reversible oil-circulating pumps force feed lubrication to gears and bearings and have an oil pressure drop switch and warning light. Oil pumps are self-adjusting for either right or left hand rotation.
- 9 ADJUSTABLE MOUNTING BRACKETS!** Easy installation and realignment. Brackets are 2 or 3 way adjustable on all models.
- 10 CLAMP-FIT PROPELLER SHAFT COUPLINGS!** Standard on all V-Drives, these flanges grip the entire circumference of the prop shaft and compensate for small variations in shaft sizes. Bores are broached and keyed.

# PARTS LIST

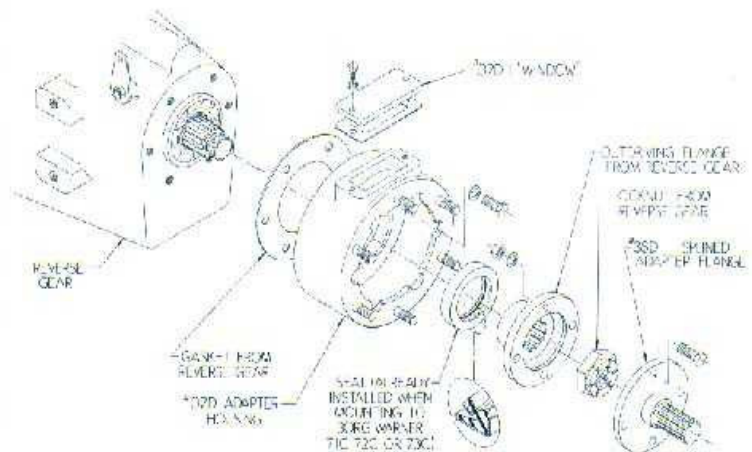
Advise serial number, model and ratio of V-Drive when ordering parts.  
(A dash indicates a part is not used in that model.)

Part No.	DESCRIPTION	RV-10D	RV-26D	RV-36D	RV-48D	RV-48D	RV-50D	Part No.	DESCRIPTION	RV-10D	RV-26D	RV-36D	RV-48D	RV-48D	RV-50D
1	Housing, Main	1	1	1	1	1	1	15A	Bearing, Gear Shaft						
2	Adapter Plate	1			1	1	1	16	Flange end	1	1	1	1	1	1
02D	Adapter Housing	1	1	1	1	1	1	17	Mounting Rtd	2	2	2	2	2	2
02D-1	Cover, Adapter	1	1	1	1	1	1	18	Stud, Nut & L'Wash	24	24	24	28	28	31
3	Cover, no pump	1	1					19A	Screw & L'Wash	8	8	8	8	8	8
35P	Cover, pump	1	1	1	1	1	1	19B	Stud, Nut & L'Wash	4	4	8	8	8	8
4	Cover, Seal	1	1	1	1	1	1	21	Oil Level Gage	1	1	1	1	1	1
5	Cover, Blank	1	1	1	1	1	1	22	Magnetic Plug	1	2	2	2	2	2
6	Cover, Watercooled	1						20R	Screw & L'Wash	4	4	4	4	4	4
6B	Cover, Plain Bottom		1	1	1	1	1	23D	Angle Housing	1	1	1	1	1	1
6D	Cover, top		1	1	1	1	1	24D	Angle Housing Cover		1	1	1	1	1
6E	Oil Cooling Coil		1	1	1	1	1	24A-D	Seal, Angle Housing	1	1	1	1	1	1
6F	Coil Terminal and O-Rings		2	2	2	2	2	25	Prop Flange, complete	1	1	1	1	1	1
8	Seal, Gear Shaft	1	1	1	1	1	1	25B	Bolts & L'Wash	3	8	3	6	9	8
9A	Pinion Shaft only	1						26D	Bearing, Angle Housing		1	1	1	1	1
9AJ	Pinion Shaft and Yoke, 1 piece		1	1	1	1	1	28	Idler Gear		1	1	1	1	1
9AJ-N	Locknut		1	1	1	1	1	29	Idler Shaft		1	1	1	1	1
9AJ-W	Lockwasher		1	1	1	1	1	29A	Idler Bushing		1	1	1	1	1
9R	Pinion Gear	1	1	1	1	1	1	29B	Idler Spacer & Shim		1	1	1	1	1
9C	Pinion Shaft Sleeve		1		1	1	1	30	Idler Bearing		2	2	2	2	2
9F	Spacer Ring		1					34	Universal Joint Double, complete	1					
10	Driven Gear	1	1	1	1	1	1	34A	Joint Repair Kit	1	1	1	1	1	1
11A	Gear Shaft	1	1	1	1	1	1	34J	Univ. Joint, less Yoke	1	1	1	1	1	1
11A-N	Locknut	1	1	1	1	1	1	36D*	Bolt, Nut & L'Wash	4	4	4	4	6	6
11A-W	Lockwasher	1	1	1	1	1	1	36D	Splined Adap. Flange	1	1	1	1	1	1
11C	Gear Shaft Sleeve			1				42A	Oil pump and Spring		1	1	1	1	1
11T	Spacer							42B	Pump End Cap		1	1	1	1	1
11D	Spacer Ring		1	1	1	1	1	42T	Pump Drive Ring & Pin		1	1	1	1	1
12	Breather Cap	1	1	1	1	1	1	43S	Oil Strainer		1	1	1	1	1
12A	Breather Elbow	1	1	1	1	1	1	44	Hose & Hose Connections		1	1	1	1	1
13	Gaskets, complete set	1	1	1	1	1	1	45	Spray Nozzle		1	1	1	1	1
14	Bearing, Pinion Shaft, yoke end	1	1	1	1	1	1	45C	Nozzle Holder		1	1	1	1	1
14A	Bearing, Pinion Shaft, closed end	1	1	1	1	1	1	49	Pressure Drop Switch		1	1	1	1	1
15	Bearing, Gear Shaft, closed end	1	1	1	1	1	1	48A	Warning Light & Plate		1	1	1	1	1
								50	Seal, Adapter Housing	1	1	1	1	1	1

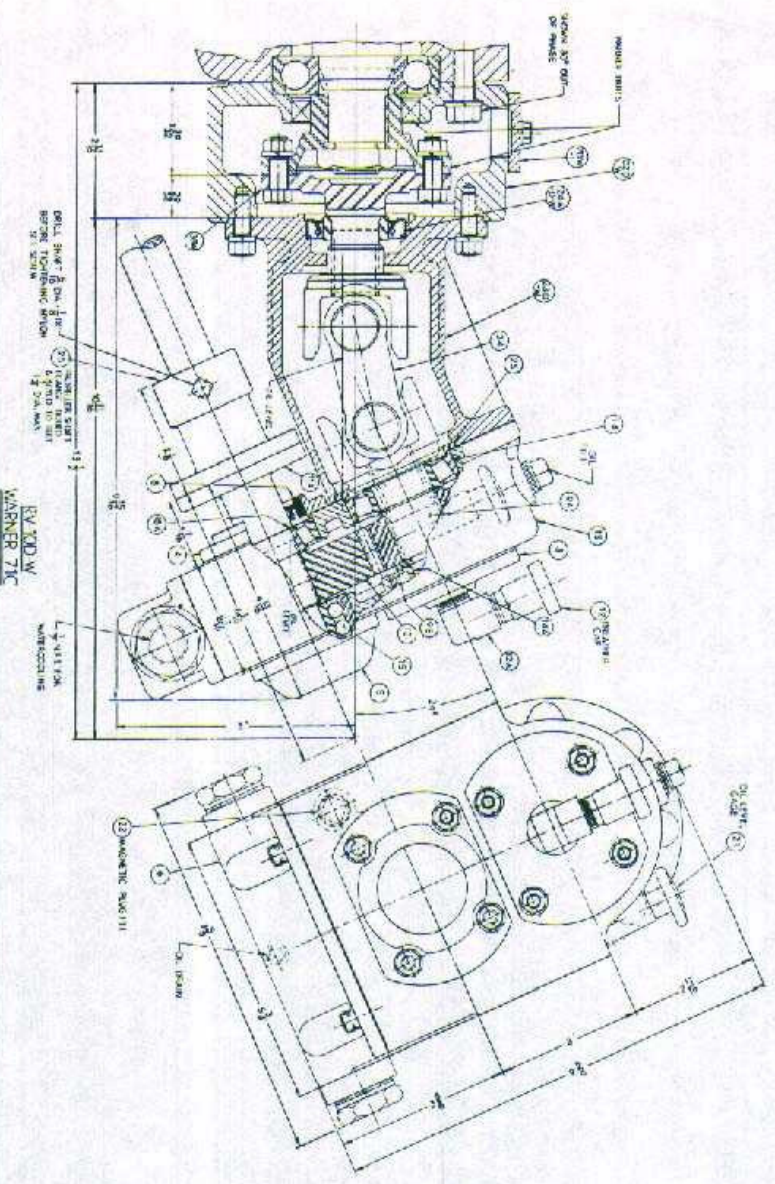
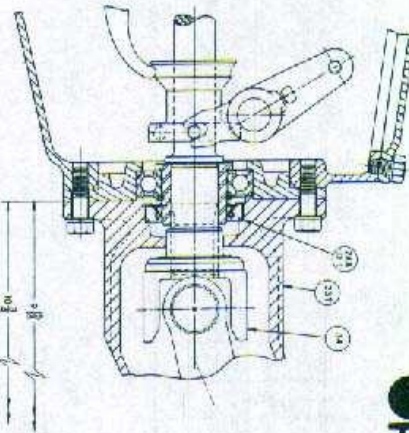
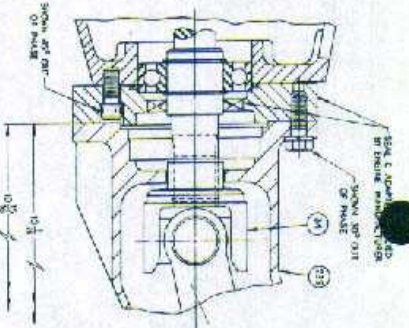
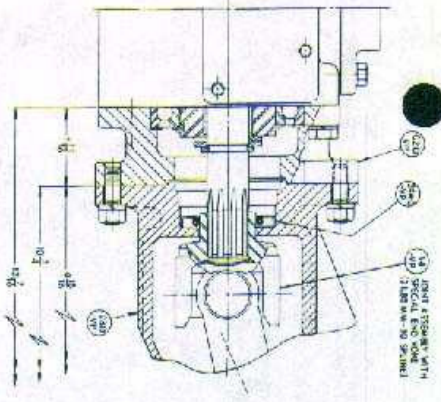
\*Supplied by engine manufacturer

## ASSEMBLY TO REVERSE GEAR

• Unbolt the output flange and back cover from the reverse gear/marine transmission. (On the RV-48D and RV-50D mounted to the Warner 73 only, the spacer ring and bearing cup must also be removed from the reverse gear back cover and installed in the #02D-73 Adapter Housing). Bolt the #02D Adapter Housing to the reverse gear (the reverse gear back cover is no longer required). Reinstall the reverse gear output flange and fasten with the locknut per the reverse gear manufacturer's specifications. Remove the #02D-1 "Window" from the Adapter Housing for wrench clearance and bolt the #38D Splined Adapter Flange to the reverse gear output flange. Reinstall #02D-1 "Window". (On some RV-10D models the #38D is not required; the female spline of the #34 Universal Joint fits over the male spline on the reverse gear output shaft). Place the #02D-G Gasket over the studs on the #02D Adapter Housing and then slide the V-Drive on the #38D Splined Adapter Flange. Secure the #23D Angle Housing against the #02D Adapter Housing with the nuts provided.







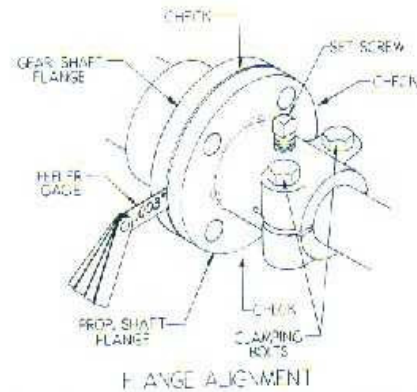
NOTE: ALL DIMENSIONS AND PART NUMBERS  
OBTAINED BY PARTIAL SECTION VIEWS  
SHOULD BE TAKEN FROM MAIN DRAWING

STANDARD RATINGS (REDUCTION)	HP/PSI R/W (CONSOLE)	THE WARNER MACHINE CO., INC. JEFFERSON CITY, N.M.
1.00-1	2.7	RV-10D DIRECT MOUNT V DRIVE
1.25-1	4.5	
1.67-1	7.2	
2.00-1	9.0	

# INSTALLATION

## Flange Alignment

• Install the #25 propeller shaft flange on to the propeller shaft and tighten the two clamping bolts on the split hub (none on RV-10D). A self-locking set screw is provided for the propeller shaft flange. Spot drill the propeller shaft and then securely tighten the set screw. Many good installations are ruined by improper propeller shaft flange alignment. Accurate alignment will ensure a smooth operating drive train and eliminate many problems that arise due to misalignment. Final alignment should not be attempted until the boat has been allowed to "settle" in the water. After the engine has been installed, adjust the mounts per manufacturer's instructions until the pilot diameters of the gear shaft flange and the propeller shaft flange engage freely. Butt the flange faces together. Without rotating either flange, check with a feeler gage in at least four places as shown in the illustration. If the maximum feeler gage that can slip between the flange faces at any point is .003", the unit is properly aligned. If a thicker gage can be inserted at any point, the engine must be readjusted until proper alignment is obtained. Turn the propeller shaft flange 1/4 of a turn without moving the gear shaft flange. Try inserting the .003" feeler gage as described above. The gap will not change if the propeller shaft is straight. If it increases, the shaft or flange is bent and must be removed and straightened. Rotate the propeller shaft flange in two more 1/4 turn increments and repeat the procedure. The pilot diameters

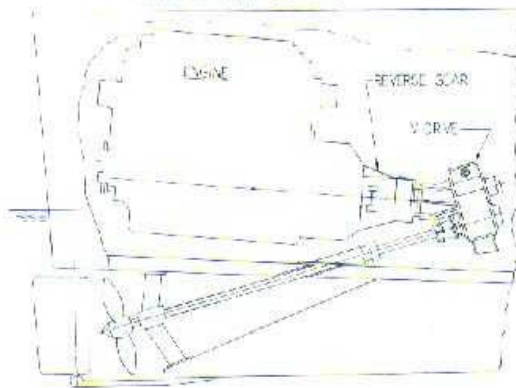


must be rechecked to ensure that they still engage freely. Secure the two flanges together with the heat treated bolts and special high collared lockwashers supplied. The RV-26D & RV-36D use stainless steel hex head cap screws, nuts, and high collared lockwashers. For the RV-50D only, see additional notes on the reduced engineering print on page 4.

## Water and Switch Connections

• Hook up the water lines to the two pipe connections on the V-Drive (intake and exhaust lines are interchangeable). The V-Drive should be incorporated into the cold side of the cooling system. In some cases, scuppers through the hull are connected to and from the V-Drive to provide independent water-cooling and are actuated by the movement of the boat through the water. With closed cooling systems, the V-Drive should be incorporated into the cold side of the raw water system. Normal operating temperature should not exceed 180°F, although safe intermittent operating temperatures may be as high as 210°F. On the models equipped with an oil circulating pump, the #49 oil pressure drop switch and the 12 volt #49A warning light should be hooked up per the wiring diagram (see page 4). The switch may be grounded to any part of the V-Drive or engine (either terminal may be used for the ground). Any silt, sand or scale in the cooling chamber (None on RV-10D) on the top of the #01C main housing should be cleaned at the start of each season. Remove the #19A cap screws and lift off the #6D-C flat top cover to expose the chamber.

INSTALLATION DRAWING

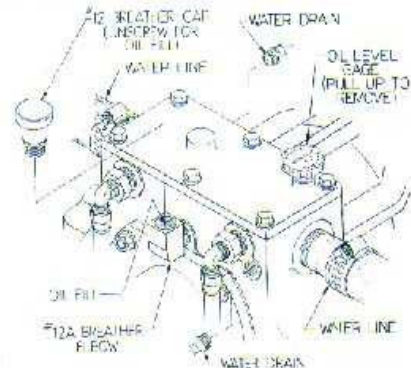


## Oil Fill

• Pull out the #21 oil level gage. Unscrew the #12 breather cap and fill the V-Drive with SAE #30 motor oil through the #12A breather elbow. On the RV-10D only, the oil may be added by removing the plug in the top of the main housing. See table below for approximate oil capacities. The amount varies with the angle of installation. The oil level should be checked with the oil level gage fully inserted in the unit. The proper level is between the "H" and "L" marks on the gage. Add a 2 ounce tube of Molykote (molybdenum disulfide), which is supplied with each V-Drive for extra lubrication and break-in. It provides protection against scoring or galling of gears, bearings and other moving parts. Additional Molykote after break-in is not required. Reinstall the breather cap. The oil level should be rechecked after the unit has been run and allowed to sit for about a minute. Add oil if necessary.

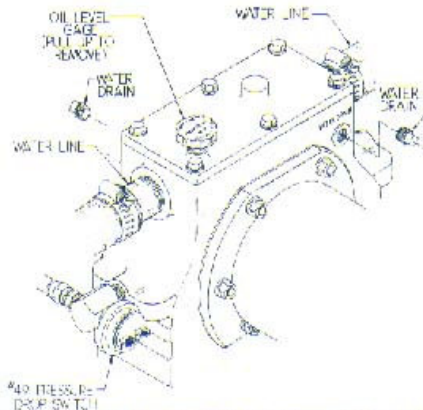
	RV-10D	RV-26D	RV-36D	RV-40D	RV-48D	RV-50D
Oil Capacity	1 pint	2 pints	3 pints	4 pints	4 pints	5 pints

(Approx.)



## OPERATION

- A pressure drop warning light is mounted on the instrument panel on V-Drives equipped with an oil circulating pump. The warning light will stay lit until the boat gets under way and the engine speed increases to sufficient RPM for the pump to maintain pressure. This normally occurs at approximately 1200 RPM, but the actual speed may vary by as much as 400 RPM. Extended cruising at low RPM, such as when trolling, is not harmful to the V-Drive, even though the warning light may stay lit. Normal operation is between 6 to 12 PSI. The light will go on when the oil pressure drops below 2 PSI. Loss of oil and/or insufficient oil level are the major causes of pressure drop. The oil level should immediately be restored, and while running the boat, the unit should be checked for leaks. If the oil level is normal and the light stays lit when the boat reaches normal cruising speed, the wiring should be checked for loose and/or corroded connections. If the wiring is correct and the light remains lit, the #49 pressure drop switch, which is mounted on the side of the V-Drive (see illustration), should be checked for proper operation. The switch can easily be removed and an accurate oil pressure gage installed in its place. If the pressure is normal, the switch should be replaced. If the pressure is below normal, the oil lines should be checked for blockage. The pump should be inspected and replaced if necessary. The oil level should be checked several times during the season, especially on V-Drives without pumps (see "Oil Fill").



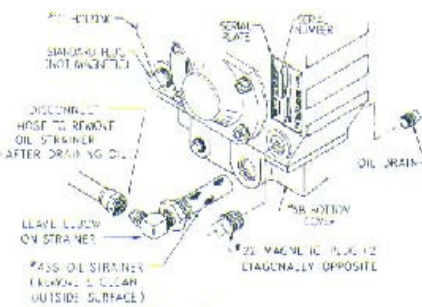
A clatter or rattle in the V-Drive at low RPM is due to drive line related vibrations, such as the overriding of the propeller during the compression stroke of the engine. It is usually not harmful to the V-Drive if it occurs intermittently. It may be reduced by adjusting the idle speed and/or tuning up the engine for smoother operation. Walter Machine Co. is not responsible for total system related torsionals of this type.

## MAINTENANCE

### Oil Change

- Note: Disregard all references to oil lines and strainer if the V-Drive is without a pump (None on RV-10D).

After the first 100 hours of operation and every season and/or 500 hours thereafter, the oil should be changed. Run the boat to warm up the V-Drive to operating temperature. Turn off the engine. Remove the plug in #6B bottom cover that is opposite the #43S oil strainer. Reinstall after draining. Disconnect the oil hose leading from the #43S strainer (leave the elbow on the strainer). Unscrew the strainer and clean the outside surface. Reinstall the strainer and reconnect the oil hose. Unscrew the two #22 magnetic plugs that are located on diagonally opposite corners of the #1C main housing (only one on RV-10D). The plugs can be checked to see if they are magnetic only after removal. Touch the inside face with a metallic object, such as a screwdriver. Clean them and reinstall. Usually, there are four plugs in the bottom part of the main housing. Only two of these are magnetic. The other two need not be removed (see illustration). Refill with SAE 30 motor oil to the proper level (see "Installation—Oil Fill").



### Water Drain

- For protection from freezing during winter lay-up, remove the small pipe plugs (located diagonally opposite) on the front and back of the housing marked "Water Drain" (see illustration). On the RV-10D only, one of the water lines going into the #6 water-cooled bottom cover must be disconnected to drain the water.

### Flange Realignment

- When the boat is launched after being in drydock, the line-up of the V-Drive to the propeller shaft flange should be rechecked and corrected if necessary. Some engines with rubber mounts may sag and must be raised with adjustments or shims for proper alignment (see "Flange Alignment" & "Engine Alignment").

### Dealer Preparation

- The propeller shaft and engine alignment must be checked and corrected, if necessary, before the boat is delivered. Final alignment should not be attempted until the boat is allowed to "settle" in the water. The oil level must be checked and oil added if required. While the boat is being run, the water connections should be checked for leaks. The oil pressure drop switch and warning light (if the V-Drive is equipped with an oil circulating pump) should be checked for proper operation. Do not transport the boat with the propeller shaft coupling connected. Damage to the shaft, shaft log and V-Drive can result.

**DANGER:** Do not touch V-Drive or related components until all shafts and exposed parts are stopped and the ignition is off. All repair and maintenance must be done by a person who is fully qualified.

**LIMITED ONE YEAR WARRANTY** — All assembled V-Drives and parts are warranted against defective material or workmanship for a period of twelve months or 400 hours of operation, whichever occurs first, from date of delivery. The Walter Machine Co., Inc. obligation under this warranty is limited to replacement or repair of any defective material when returned prepaid to our factory in Jersey City, and shall be subject to our inspection and verification of claim. Each V-Drive has a serial number on a nameplate on the side of the main housing, which must be submitted when making warranty claim. This warranty will not apply to any failure which results from accident, neglect, fire, sinking, abuse, abnormal service, lack of maintenance or improper installation or service. This warranty will not apply to haul-out, launch, towing or storage charges, mechanic travel time, inconvenience, loss of time or income, removal and replacement and/or modification of any boat parts to facilitate repairs. The Walter Machine Co., Inc. will not accept responsibility for contingent liability through failure of any complete unit or part.

Manufactured by: THE **WALTER** MACHINE CO., INC. • P.O. Box 7700 • 84-98 CAMBRIDGE AVENUE • JERSEY CITY, N.J. 07307  
TELEPHONE: (201) 658-5854 FAX: (201) 658-0318