

MANTARAY 30

PROPANE STRIPPING MACHINE

INTRODUCTION

OPERATING & MAINTENANCE INSTRUCTIONS

READ THIS BOOK

This operator's book has important information for the use and safe operation of this machine. **Read and understand the Engine Operator's Manual and this manual before starting the machine.** Keep this book and tell all operators to read the book. **If you do not follow the instructions, you can cause an injury or damage equipment, furniture or buildings.**

For new books write to:

Pacific
2259 S. Sheridan
Muskegon, MI 49442-6252

Carefully inspect all components to ensure that there is no concealed freight damage. If such damage is discovered, file a "CONCEALED DAMAGE REPORT" immediately with the delivering carrier.

The contents of this manual are based on the latest product information available at the time of publication. Pacific reserves the right to make changes or improvements to its machines without notice.

**FOR YOUR CONVENIENCE, RECORD THE
MACHINE AND ENGINE MODEL AND SERIAL
NUMBERS HERE:**

MACHINE MODEL _____

MACHINE SERIAL NUMBER _____

ENGINE MODEL _____

ENGINE SERIAL NUMBER _____

TABLE OF CONTENTS

IMPORTANT SAFETY INSTRUCTIONS	3
TRANSPORTING THE MACHINE	4
A. Tilting the Machine	
B. Position for Maintenance and Cleaning	
PREPARATION	4
A. Maintenance Schedule	
B. Check Engine Oil	
C. Fill LP Tank & Check for Leaks	
D. Connecting HP Hose to Tank	5
E. Install Fresh Pads or Brushes	
OPERATION	5
A. Prepare Machine	
B. Transport	
C. Apply Cleaning or Stripping Solution	
D. Starting Engine	
E. Stopping Engine	
F. Transporting	6
G. Cleaning Equipment	
H. Storing Machine & Tank	
MAINTENANCE	6
A. Machine & Engine Maintenance	
B. Engine Maintenance Meter	
C. Troubleshooting Electrical System	
D. Battery Run Down	7
E. Engine Runs, but Brushes Do Not Engage	
PARTS LISTS	8
A. Lower Drive Assembly	
Brush Options	9
B. Upper Drive Assembly	10
Engine Maintenance Items	11
WARRANTY POLICY	12

IMPORTANT SAFETY INSTRUCTIONS

READ AND UNDERSTAND ALL INSTRUCTIONS AND WARNINGS BEFORE OPERATING THIS MACHINE!

WARNINGS:

1. **DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS MACHINE. ALWAYS STORE EQUIPMENT AWAY FROM HEATER ROOMS, BOILERS, GAS-FIRED WATER HEATERS OR ANY OTHER SOURCE OF OPEN FLAME.**
2. **NO SMOKING, NO SPARKS, NO FLAMES NEAR UNIT OR LP TANK.**
3. **OPERATE ONLY IN WELL VENTILATED AREAS. BUILDINGS MUST BE PROVIDED WITH:**
 - A) **A CONTINUOUS MECHANICAL VENTILATION THAT REMOVES THE PRODUCTS OF COMBUSTION TO THE OUTDOORS OF NOT LESS THAN 300 CFM FOR EACH 10,000 BTUH OR FRACTION THEREOF; OR**
 - B) **NATURAL VENTILATION OF NOT LESS THAN 300 CFM FOR EACH 10,000 BTUH INPUT OR FRACTION THEREOF, BASED ON A MAXIMUM OF ONE-QUARTER AIR EXCHANGE PER HOUR FOR THE NET BUILDING VOLUME.**
4. **IF YOU SMELL LP GAS, STOP THE UNIT AND CHECK FOR LEAKS. ALSO OPEN WINDOWS, DON'T TOUCH ELECTRICAL SWITCHES, EXTINGUISH ANY OPEN FLAMES. CALL YOUR GAS SUPPLIER IF NO LEAKS ARE FOUND.**
5. **DO NOT ADJUST THE FUEL SYSTEM WITHOUT THE PROPER ANALYSIS EQUIPMENT.**
6. **NEVER TURN THE UNIT ON ITS SIDE.**
7. **NEVER TILT & TRANSPORT WHILE ENGINE IS RUNNING.**
8. **KEEP HANDS AND FEET CLEAR OF ALL MOVING PARTS.**
9. **TURN THE GAS OFF AT THE TANK TO KILL THE ENGINE.**
10. **REMOVE THE LP TANK AND STORE IT IN AN APPROVED AREA WHEN NOT IN USE. A "NO SMOKING" SIGN SHOULD BE PERMANENTLY DISPLAYED AT THE STORAGE AREA.**
11. **ALWAYS VENT AN OVER-FULL BOTTLE USING THE TANK'S BLEED VALVE, OUT OF DOORS AWAY FROM ALL CLOSED PLACES AND AWAY FROM ANY FIRE OR FLAME PRODUCING DEVICE.**
12. **KEEP ALL OBJECTS CLEAR OF THE EXHAUST SYSTEM DURING AND AFTER OPERATION.**
13. **DO NOT LEAVE THIS MACHINE UNATTENDED WHILE THE ENGINE IS RUNNING.**
14. **ALWAYS STORE EQUIPMENT AWAY FROM POSSIBLE DAMAGE BY FALLING OBJECTS IN WAREHOUSE-TYPE AREAS. ALWAYS STORE LPG TANKS OUTSIDE IN A SECURE, WELL-VENTILATED AREA.**
15. **WHEN THE LP TANK IS ATTACHED TO THE MACHINE AND NOT RUNNING, THE OPERATOR SHOULD NOT LEAVE THE MACHINE UNATTENDED EXCEPT FOR SHORT PERIODS OF TIME SUCH AS REST STOPS, WASHROOM OR MEAL STOPS.**
16. **THE OPERATOR MUST COMPLETELY UNDERSTAND ALL INSTRUCTIONS, WARNINGS AND OPERATING PROCEDURES BEFORE USING THIS MACHINE.**
17. **THIS MACHINE MUST BE MAINTAINED IN ACCORDANCE WITH THIS MANUALS RECOMMENDED MAINTENANCE INSTRUCTIONS AND THE ENGINE MANUFACTURERS RECOMMENDED MAINTENANCE PROCEDURES. FAILURE TO DO SO MAY CAUSE DAMAGE TO THE MACHINE, EQUIPMENT, FURNITURE, BUILDINGS OR PERSONAL INJURY!**

TRANSPORT & PREPARATION

WARNING! Follow the instructions given in this booklet, the Engines Owners Manual and the training given by your supervisor for the safe operation of this machine. Failure to do so can result in personal injury and/or damage to the machine or property.

TRANSPORTING THE MACHINE

NEVER TRANSPORT MACHINE WHILE ENGINE IS RUNNING!

To transport the machine it is necessary to tilt the machine back on the rear wheels so the brushes (or pads) are not in contact with the floor. In this “balanced” position the equipment can be readily moved from site to site.

A. Tilting the Machine

This is a heavy piece of equipment. Caution should be used in tilting the machine. This can be accomplished safely and easily as follows:

One man method:

- 1) Standing behind the machine, place one foot on the brace at the base of the propane tank.
- 2) Place one hand on the handle and the other on the “U” frame handle support.
- 3) While pulling and leaning back, lift the other foot off the floor and extend it directly behind. This will shift the balance and naturally tilt the equipment to transport or full “tilt back” position without undue strain.

Two man method:

Two people side by side perform the above procedure simultaneously. This is a safer, more comfortable technique to use until more experience is gained with the equipment.

WARNINGS:

- DO NOT USE “T” HANDLE WHEN ATTEMPTING TO TILT BACK MACHINE FOR SERVICE OR CLEANING. THE “T” HANDLE IS DESIGNED FOR CONTROL DURING OPERATION ONLY.
- DO NOT USE EXCESSIVE VERTICAL PRESSURE.

B. POSITION FOR MAINTENANCE & CLEANING

To perform certain maintenance & cleaning tasks or to change brushes the machine should be placed in the full “tilt back” position.

DO NOT OPERATE THIS MACHINE IN AN EXPLOSIVE ENVIRONMENT!

THIS PROPANE STRIPPING MACHINE IS INTENDED FOR COMMERCIAL USE.

PREPARATION

A. CHECK THAT THE SUGGESTED MAINTENANCE SCHEDULE HAS BEEN OBSERVED.

All machines are equipped with a multi-function maintenance meter. The functions include the following: hour meter, service alert and tachometer. (See Engine Maintenance Meter Instructions)

B. CHECK THE ENGINE OIL BEFORE EVERY OPERATION!

Make sure the machine is level when checking the oil. Always take 2 readings of the dip stick before adding oil. If the oil level is below the full mark, add just enough oil to the engine to bring the oil level up to the full mark. **Never over fill.** Follow the guidelines in your Engine Owners Manual. Recommended oil is SAE 10W-30. Check for foreign material on the dipstick.

C. PROPERLY FILL AND CHECK YOUR LP TANK AND ALL LP FUEL LINES FOR LEAKS!

1. Every tank has been pressure and leak tested. However, **every time a tank is filled and/or connected to the machine it should be soap tested.** All LP lines must be pressurized and every inch of line and connections must be sprayed. If you find a leak, make the proper repairs before operating the machine. **NOTE:** The connection and disconnection of the LP tank must be done in a well ventilated area with NO source of ignition within 10 feet (3 meters) from the point of connection.

2. **Never over fill the LP tank!** The LP tank is designed to hold just 20 pounds of propane. Make sure to weigh the tank as it is being filled. The gross weight of a full tank should not exceed 48 pounds. If while operating the machine you notice frost forming on the LP lines or the regulator, your tank has been over filled. If you continue to operate the machine in this condition damage will occur. The excess propane in the tank must be removed before normal operations resume. The bleeding of a propane tank should be done in a safe location outside the building. In some cases the regulator must defrost before restarting the engine.

PREPARATION & OPERATION

D. CONNECTING THE HIGH PRESSURE HOSE TO THE LP TANK: Make sure the couplers are in line and screwed together hand tight. If this is not done properly, fuel will not pass through to the regulator. Never complete the connection of the tank to the machine by using a wrench. Always do it by hand. Listen for the rush of fuel to the lock-out device when you open the tank valve. If you hear this, it indicates a good connection has been made at the tank.

NEVER CHANGE OR ALTER THE PROPANE CONTROL EQUIPMENT!

E. INSTALL FRESH PADS OR BRUSHES BEFORE EVERY JOB: To install a fresh pad, set the machine down in the rear. Unscrew and remove the pad-centering ring. Remove the old pad and center the new pad onto the pad driver. Reinstall the pad-centering ring. Never “flip” a pad. Keep the same side down throughout the life of the pad. Even after a pad is cleaned, you can tell the down side by the centering ring indentation. This practice will increase the pad life and help maintain a properly functioning pad driver. **NEVER TILT A MACHINE ON ITS SIDE!**

OPERATION

This machine is designed to deep scrub and/or strip hard surface floors in preparation for top coat or restoring of tile, smooth concrete, terrazzo or close fitted tile. Any other application of the equipment should be checked with customer service at the factory to determine if the proposed use is appropriate.

PROVIDE AND USE EAR PROTECTION DURING OPERATION.

NEVER LET AN UNTRAINED PERSON OPERATE OR PERFORM REPAIRS ON THE MACHINE. THEY MAY HURT THEMSELVES, DAMAGE THE FLOOR OR THE EQUIPMENT.

ENGINE SPEED NOT TO EXCEED 3400 RPM.

THIS MACHINE IS NOT SUITABLE FOR PICKING UP HAZARDOUS DUST.

DO NOT USE ON SURFACES WITH A GRADIENT EXCEEDING 2%.

A. PREPARE THE MACHINE FOR OPERATION

Follow steps A through E in the previous section and determine the best brush or pad for the task.

B. TRANSPORT BY TILTING ON REAR WHEELS

C. APPLY CLEANING OR STRIPPING SOLUTION TO THE FLOOR SURFACE.

D. START THE ENGINE

1. Open propane (LPG) tank valve (counter clockwise).
2. Set throttle control at idle.
3. Turn the key to the start position and move the throttle toward fast position. If engine does not start, release the key and return to step “2”.
4. Keep hands, fingers and feet clear of all moving parts while the machine is in operation.
5. The machine is supplied with a centrifugal clutch. When the engine RPM is lower than 1800, the clutch disengages and the pads/brushes will stop.

NEVER TILT BACK MACHINE WHILE ENGINE IS RUNNING.

E. STOPPING THE ENGINE

Turn the propane tank valve clockwise to a closed position and turn the key OFF.

NOTE: The exhaust system will be very hot and takes several minutes to cool, so keep yourself and all materials clear!

OPERATING PROCEDURES

F. TRANSPORTING THE MACHINE

1. The tank should be securely fastened.
2. The tank valve must be closed.

G. CLEAN THE EQUIPMENT

1. Place machine in “tilt back” position.
2. Rinse unit between top of brushes and brush plate. Do not spray water into brush drive (above plate).
3. Rinse around splash skirt and body.
4. Return machine to operating position, then start engine and run machine briefly to expel any excess water.

H. STORING THE MACHINE & TANK

1. The engine should be stopped properly and the tank valve closed.
2. Remove the LP tank from the machine and store the tank in an well ventilated approved area.
3. Store your machine in a safe area: away from enclosed high heat, away from sparks or flames, away from traffic lanes of heavy equipment.

REFER TO SAFETY INSTRUCTIONS!

MAINTENANCE

A. MACHINE & ENGINE MAINTENANCE

1. Refer to engine manufacturer’s owners manual and comply completely with the instructions. Change the oil and filter according to the Engine Owners Manual. Recommended oil is SAE 10W-30.
2. Keep a good service log on each machine with the date, hour meter reading, type(s) of service performed and the name of the person who performed them.
3. Clean the entire unit after each use. When cleaning the unit, check for possible loose nuts and bolts.

B. ENGINE MAINTENANCE METER

This multi-function meter acts as a preventive maintenance tool; which benefits you with increased fuel economy, less down time and longer engine life.

The meter’s displays are:

HOUR METER: Displays total run hours when machine is off.

TACHOMETER: Indicates engine R.P.M. during operation.

SERVICE ALERT: The display flashes to alert you to lube and change the oil at 25 hour intervals. The service alert only flashes during operation and it warns you to change the oil for only two hours. After the two hours is reached, the alert will automatically reset to the next 25 hour interval. Therefore, it is recommended that a separate maintenance log be kept to track oil changes.

REMEMBER THAT BEING SAFE IS A FULL-TIME, EVERY DAY JOB. FOLLOW ALL INFORMATION POSTED ON THE MACHINE AND THE LP TANK.

NEVER ALLOW ANYONE TO OPERATE THIS MACHINE THAT HAS NOT READ OR CANNOT UNDERSTAND THE GIVEN INSTRUCTIONS.

C. TROUBLESHOOTING THE ELECTRICAL SYSTEM

1. Check all wire connections for obvious problems. Remove LPG tank, then remove battery box cover. Check all connections visibly and physically. If any “loose”, damaged or unconnected wires are noticed, replace or repair as needed.
2. Check the battery posts and wires. **Always wear a face shield, safety glasses and protective clothing when working around a battery!** The gases can be explosive and the acid is highly corrosive to metals, cloth and ALL HUMAN TISSUE (skin, eyes, etc.) If the battery post(s) are corroded, remove the wires and clean posts and wires. Applying some axle grease on the posts or the battery after they are cleaned will slow down the battery corrosion process.

If nothing obvious is noted, a more detailed investigation is warranted. Before any such troubleshooting begins, the following things should be done:

3. Replace propane (LPG) tank with one from a machine that runs.

MAINTENANCE

4. Charge the battery or provide an absolute source of 12 volt DC power capable of 50 amperes total output. (A pair of good jumper cables from your car or truck battery will suffice.) Equip yourself with an inexpensive 12 volt test light.
5. If the trouble seems to be in the electrical control equipment, you may wish to disconnect the starter from the system so as to check the system without spinning the engine.

D. BATTERY RUN DOWN

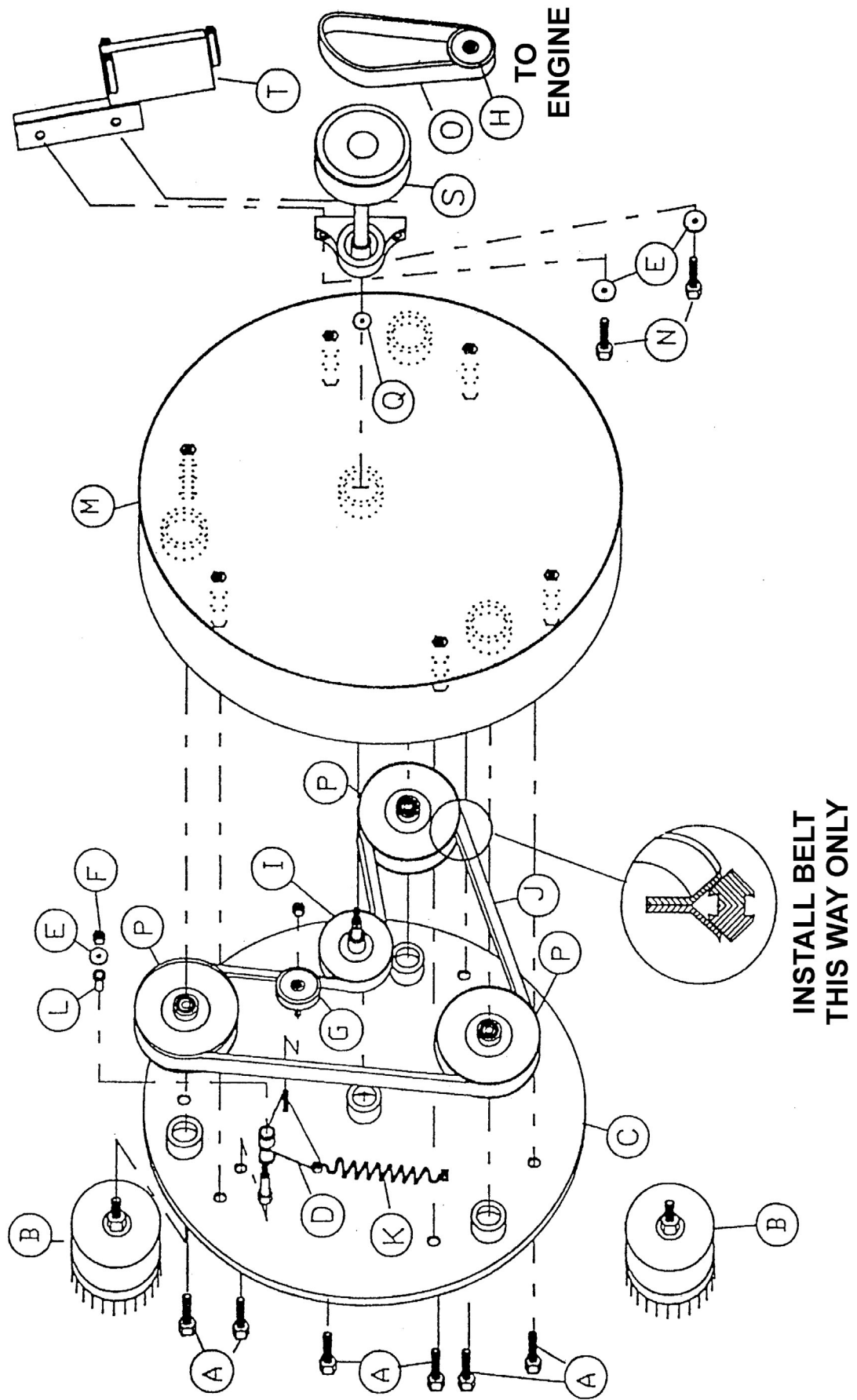
A common problem is letting the battery run down. What usually happens is that it takes the crew a few jobs to get used to the whole system, so the machine is stopped and started quite often.

E. ENGINE RUNS, BUT BRUSHES DO NOT ENGAGE

This is usually related to the main drive belt or the belt tension spring. Without disassembling this machine, you can check and fix the following:

1. **Belt Tension Spring:** Place machine in “tilt back” position. Go under the machine and reach your hand up between the lower drive assembly and the body of the machine. Check if belt tension spring is attached to idler and spring mount bolt on body. If you can reach your arm up further, you will feel the pulley of the main drive shaft for the input boom pulley. By just a touch, you should be able to manipulate a fallen belt back in place. You will do well to master the above procedure. Such a simple problem in the hands of inexperienced people can cost a crew much of a night’s work.
2. **To change the Engine Drive Belt (O):** Remove three (3) bolts on right hand side of upper deck (3/4” wrench) . Then slowly raise the front of the machine off the floor. Notice how the belt is set in its place as this will help you in returning the new belt to its proper place. Remove the idler pulley only (9/16” wrench). Notice that one side of the idler pulley hub sticks out farther than the other side. This is very important! The side that sticks out the most should be put on first, facing the idler plate. If it is put on the other way, the idler may not turn and will not line up with the drive (engine) and lower drive assembly pulleys. This will accelerate belt wear and increase the chance of the belt running off one of the pulleys. Also check for wear on the springs, catches and the idler. The machine should be kept in “new” condition to ensure a minimum down-time factor.
3. **To change the Brush Drive Belt (J):** Remove the three (3) bolts on right hand side of upper deck (3/4” wrench) . Then slowly raise the front of the machine off the floor. Remove the input boom pulley and boom arm from the brush drive. Next, remove the six (6) bolts from the bottom side of the brush drive and separate the brush drive top pan from the brush drive plate. Remove the worn belt and replace. While disassembled, check the tension spring and idler for damage. Also check the bearings and replace if necessary. Note: Assemble pulleys, belt, idler and spring on the brush drive plate. Then install the top pan and six (6) bolts.

LOWER DRIVE ASSEMBLY



LOWER DRIVE ASSEMBLY

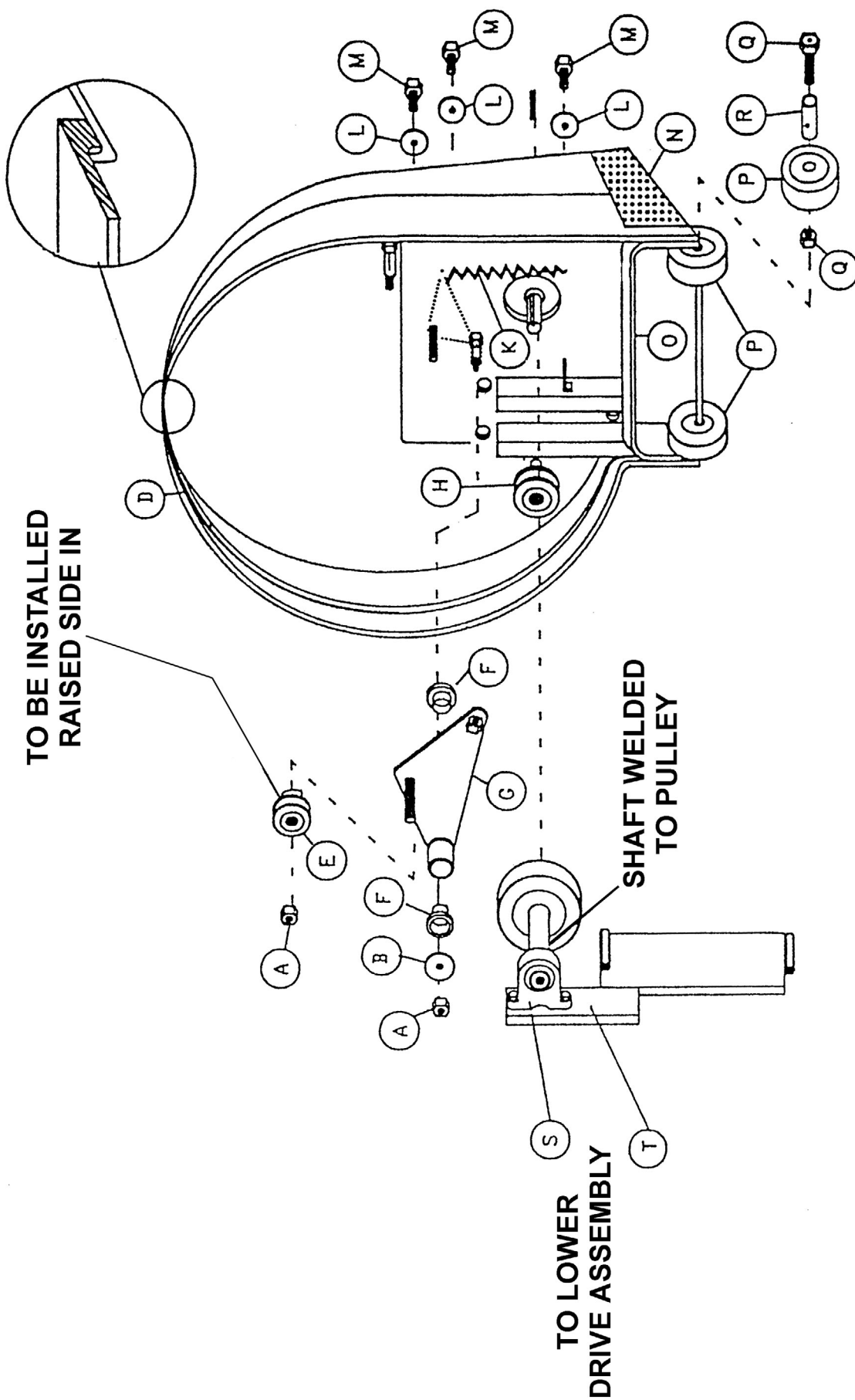
ITEM	PART NUMBER	DESCRIPTION	QTY
A	962131	Bolt, Hex Hd, 1/2 x 13 x 1	6
B	270901	Brush Strip	3
C	276602	Steel Plate, 28"	1
D	270301	Idler (Pan)	1
E	980007	Washer, 5/16" Flat	3
F	920002	Hex Nut, 3/8"-16	2
G	276901	Vee Idler Pulley	1
H	272406	Centrifugal Clutch	1
I	276903	Center Pan Pulley	1
J	903023	Double Vee Belt	1
K	278304	Spring	1
L	271113	Nylon Bushing	1
M	277003	Top Pan, 28"	1
N	962148	Bolt, 3/8 x 16 x 2	2
O	903024	Belt	1
P	276904	Outer Pan Pulley	3
Q	W338D	Washer, 5/8 ID x 1-1/4 OD Flat	1
S	276904	Input Boom Pulley Assembly	1
T	271304	Head Support Boom	1

PART NUMBER	BRUSH OPTIONS - 3 Required per Machine
270901	Brown/Red (4 row) - Very aggressive stripping brush. Holds up best for concrete. 0.080 dia. Malgrit-Xtra bristles.
270902	Blue (5 row) - Deep scrubbing and light stripping. 0.060 dia. Strata-Grit bristles.
270903	Black Nylon (5 row) - Light shower scrub. Will not remove finish. 0.020 dia. Nylon bristles.
270904	Wire (5 row) - For light scarifying or compacted debris removal on concrete applications.
	PAD DRIVER SYSTEM- 3 Required per Machine
275901	Designed for driving 10" pads. Pad Grabber III holds pads. Quick connect pad clips for easy pad change. Comes with Black Hi-Pro pads. Nylon bristles help prevent pads from clogging.

UPPER DRIVE ASSEMBLY

INSTALL SPLASH GUARD
THIS WAY ONLY

TO BE INSTALLED
RAISED SIDE IN



UPPER DRIVE ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QTY
A	920002	Nut, 3/8-16 Hex	2
B	980007	Washer, 5/16" Flat	1
D	278502	Splash Skirt	1
E	276901	Vee Idler Pulley	1
F	271113	Nylon Bushing	2
G	274801	Clutching Idler	1
H	272406	Centrifugal Clutch	1
K	278304	Spring	1
L	W120D	Washer, 1/2"	3
M	962132	Bolt, 1/2 x 13 x 1	3
N	276603	Kick Plate	1
O	278503	Back Splash	1
P	279705	Wheel, 6"	2
Q	960040	Axle Bolt & Nut	2
R	271114	Spanner Bushing	2
S	276904	Input Boom Pulley Assembly	1
T	271304	Head Support Boom	1

Kawasaki Engine Items Not Shown:

PART NUMBER	DESCRIPTION
273308	Oil Filter
273307	Paper Air Filter - Carb. Intake
273306	Filter, Pre-foam Carb.
273301	Filter, Top Foam Engine

WARRANTY POLICY MANTARAY 30

The **Pacific** MantaRay 30 has been manufactured, tested and inspected in accordance with specific engineering requirements and is **WARRANTED** to be free from defects in workmanship and materials as follows:

Two (2) years parts and labor - Engine (Warranty through Kawasaki)

One (1) year parts and labor - All other components unless excluded below (Warranty through Pacific).

This warranty extends to the original user/purchaser and only when used, operated and maintained in accordance with **Pacific** Operating and Maintenance instructions.

This warranty does not apply to the wear parts and accessories of the machine including belts, brushes, pad drivers and starters.

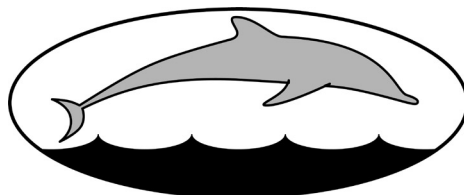
Nor does it apply to damage or failure caused by improper use, abuse or neglect. Warranty credit or replacement of return parts including motors, etc., is subject to incoming inspection of those items.

To secure repair under this warranty, the following procedure should be taken:

- If the warranty issue is not the engine, the inoperative machine or warranted parts must be delivered to the authorized **Pacific** dealer with shipping and delivery charges prepaid. If unable to locate the Dealer, you may contact **Pacific** at the address listed herein for the location of the nearest **Pacific** repair center or agent or for other instructions pertaining to your warranty difficulty.
- For **Engine Warranty** repair deliver the machine to the nearest **Kawasaki Warranty Service Center**. To locate the nearest Kawasaki Service Center call 1-800-433-5640 or go to www.kawpowr.com and choose "Dealer Locator", then select the Product Category "KAWASAKI ENG SVC: ALL OEMS" and input your zip code.
- Upon compliance with the above warranty procedure, all warranted repairs would be completed at no additional charge or cost to the user.
- Only **Pacific** or its authorized dealers and agents may make no charge warranty repairs on this product. All others do so at their own risk.

This warranty limits **Pacific** liability to the repair of the product and/or warranted parts replacement and does not include incidental or consequential damages arising from the use of a **Pacific** machine whether defective or not.

This warranty is in lieu of all other expressed or implied warranties and is extended to the original purchaser/user.



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