

# Operator's Technical Manual Table of Contents

## For Darley

### Honda Engine Driven 2BE6.5H Portable Pump

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Model: **2BE6.5H** Pump Serial Number: \_\_\_\_\_

IF FURTHER INFORMATION IS NEEDED, CALL W.S. DARLEY & CO. IN  
CHIPPEWA FALLS, WI. AT 800-634-7812 or 715-726-2650

## Introduction to the Darley 2BE6.5H Portable Pump

The Darley 2BE6.5H portable dewatering/fire pump unit is manufactured by W.S. Darley & Company in Chippewa Falls, WI, U.S.A. It consists of the Darley 2BE pump coupled to a 6.5 horsepower Honda GX-200 gasoline engine, and is mounted on an aluminum frame for easy transport to the scene of the emergency.

The dewatering kit consists of

- The pump engine unit,
- A 15' long, 3" diameter suction hose with quick disconnect fitting, and screen,
- A 20' long, 3" diameter fiber reinforced discharge hose with quick disconnect fitting,
- A removable, 3 gal. portable fuel tank, (four hour capacity)
- A flashlight,
- A laminated instruction card in four languages,
- An operation and maintenance manual, and
- A spare pull rope for starting the engine without the recoil starter.

This equipment is designed to fit in the Coast Guard dewatering pump kit container. The pump/engine unit weighs less than 60 pounds, and the complete kit, with fuel, weighs less than 120 pounds.

The operation of the Darley 2BE6.5H is simple. The suction and discharge hoses connect to the pump via quick disconnect camlock style fittings. The different colored fittings used on the suction and discharge hoses assist in preventing misconnection of the hoses. The four cycle Honda engine runs on regular unleaded fuel and is easily started. A throttle control allows the operator the ability to adjust the dewatering rate to meet the needs of the emergency. At full throttle, the pump is capable of delivering over 250 gallons per minute at a 12' suction lift. Higher discharge rates will be achieved at lower suction lifts.

The Darley 2BE6.5H utilizes a mechanical pump shaft seal that is a double lip seal. This seal was chosen because of its performance and ability to survive losses of suction, and still deliver water at rated capacity even when damaged. While the seal will require replacement after hundreds of hours of operation (the seal is a normal wear item in pumps), its ability to operate in a damaged condition makes it a better choice than other mechanical seal designs.

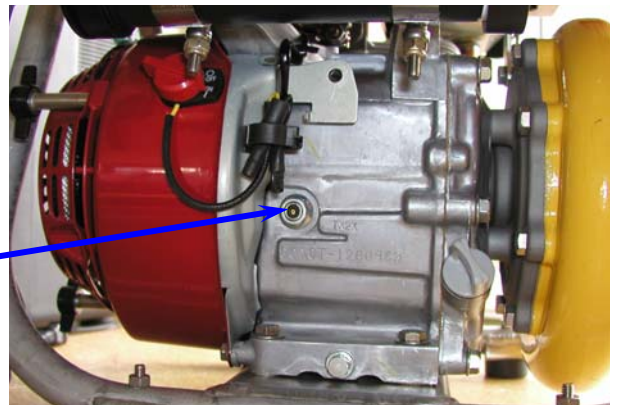
Stainless steel and other marine grade alloys have been used in the construction and assembly of the Darley 2BE6.5H pump. The pump features an integrated discharge check valve that aids in priming and operating the unit. If the unit is stopped while dewatering, the pump will remain primed as long as the suction hose strainer is submerged. The manual, positive-displacement priming pump provides quick and easy priming in less than a minute at a 12' suction lift.

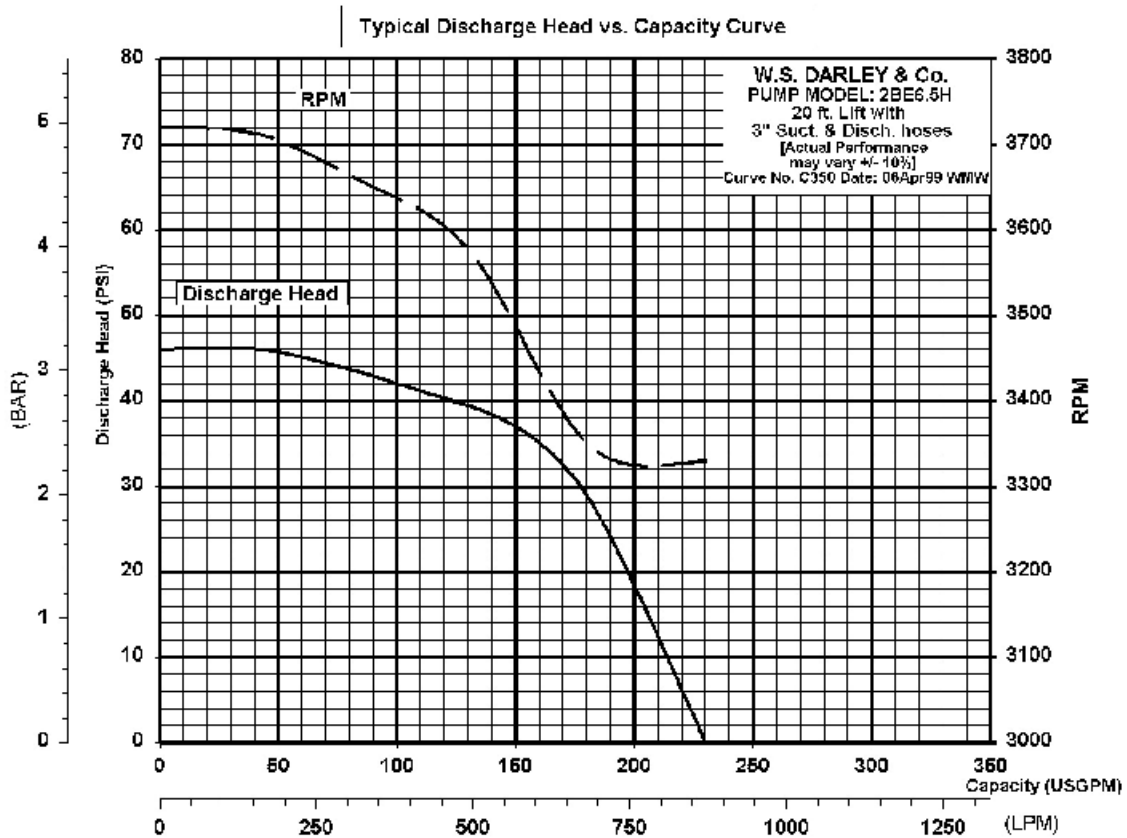
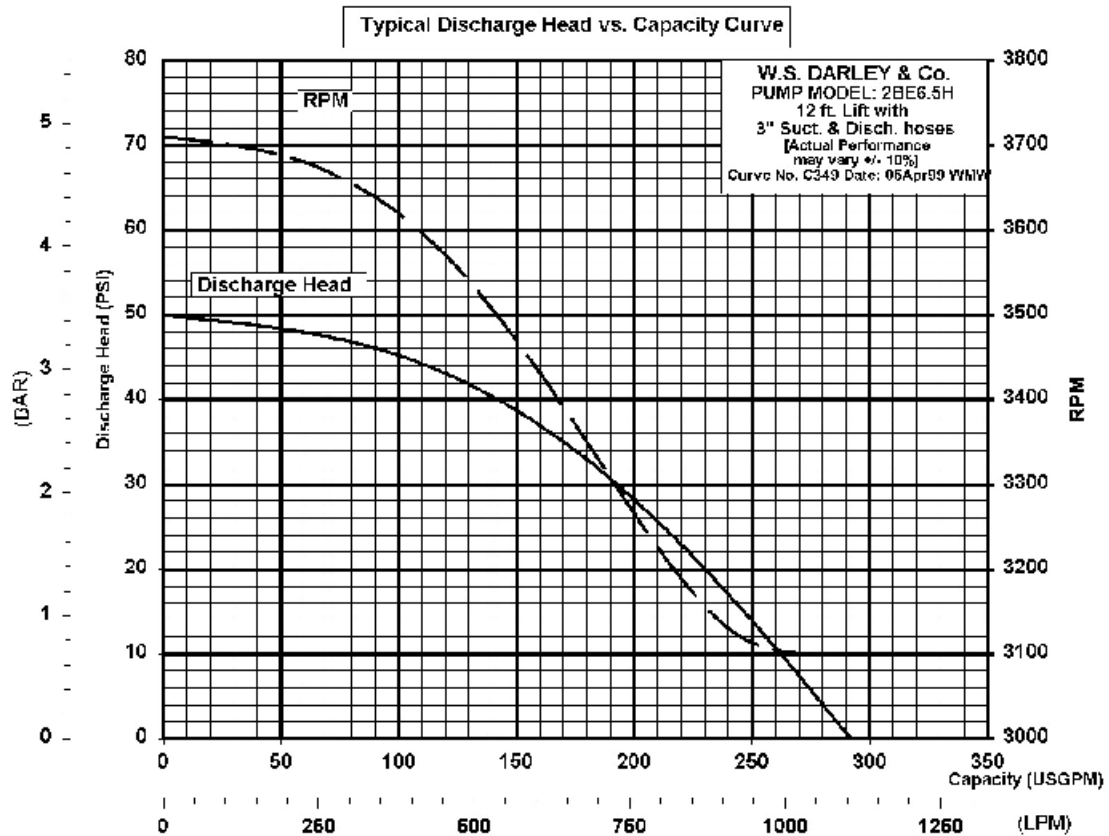
The 6.5 horsepower GX-200 Honda engine is commercially available at local engine shops. The engine incorporates overhead valve technology and reduced maintenance features. A quick disconnect fuel fitting provides for rapid and easy fuel tank changing without stopping the engine. Testing has proven the engine to be easy to start and operate, even after extensive environmental exposure. Most of the maintenance on the engine is condition based instead of time or interval based, which minimizes preventive maintenance.

### Notice:

The wire that typically connects the low oil level float to the engine ignition has been intentionally disabled to prevent the engine from cutting out or stalling in rough water.

This wire is to  
be removed,  
as shown here





**Operating and Maintenance Instructions For  
Darley  
Model 2BE6.5H Portable Pump**

**Quick Start Instructions**

**WARNING: DO NOT USE THIS PUMP BELOW  
DECKS OR IN CONFINED SPACES**

**WARNING: THIS PUMP IS NOT TO BE USED TO  
PUMP FLAMMABLE LIQUIDS**

**DANGER: CONTENTS OF THE FUEL CAN ARE FLAMMABLE OR  
COMBUSTIBLE VAPORS CAN EXPLODE. HARMFUL IF SWALLOWED.**

**If swallowed, do not induce vomiting, call physician.**

**Keep out of reach of children.**

**Avoid prolonged breathing vapors.**

**Do not siphon by mouth.**

**Do not refill or store in vehicle, aircraft or living space.**

**Store and use in a well-ventilated area.**

**Vapors can be ignited by a spark or flame source. Keep away from flame, pilot  
lights, stoves, heaters, electric motors, and other sources of ignition.**

**Keep container closed when in use.**

**Fill without spilling.**

**Before Initial Use:**

- Spray suction and discharge fitting grooves with a dry film silicone lubricant spray.
- Spray the suction and discharge hose fitting cams with a dry film silicone lubricant spray.

**Starting and Operating the Pump:**

1. Connect the fuel hose from the engine to the fuel tank fitting.
2. Connect the suction hose to the pump and lower the suction hose into the water, ensuring the suction hose strainer is completely submerged.
3. Connect the discharge hose to the pump and position the hose to discharge overboard. Secure the end of the hose to prevent it from moving.
4. Turn the engine ignition clockwise to the "ON" position.
5. Open the fuel valve on the engine by pushing it to the right to the "ON" position.
6. Move the choke lever left to the "CHOKE" position.
7. Set the throttle about 1/3 open.
8. Prime the pump by briskly cycling the hand primer handle in and out until water is discharged from the hand primer cylinder cap (see also the "Priming and Starting the Pump" on page 7).
9. Start the engine using the recoil starter.
10. Shut off the choke.
11. Check the discharge flow. If no flow, operate the hand primer until water is flowing from the discharge hose.

**WARNING: This pump is equipped with a mechanical lip seal. Avoid  
running the pump dry or at high speed if there is no discharge  
water. If there is no discharge flow after two minutes, shut  
down the engine and check for leaks in the suction hose.**

12. Once the pump is primed and discharging water, slowly opening the engine throttle, by pushing the throttle lever to the left until full throttle position, increases the pump's discharge flow capability.

### **Shutting Down and Stowing the Pump:**

1. Return the throttle to the "IDLE" position.
2. Close the fuel valve by pushing it to the left to the "OFF" position.
3. Shut down the engine by turning the ignition switch counter clockwise to the "OFF" position.
4. Disconnect the suction and discharge hoses.
5. Tip the unit toward the pump's discharge to drain the water. After all water is drained, return the pump to its normal upright position.
6. Operate the primer a few times to purge it of water.
7. Flush the pump with fresh water and operate the hand primer.
8. Tip the unit toward the pump's discharge to drain the water. After all water is drained, return the pump to its normal upright position.
9. Operate the primer a few times to purge it of water.
10. Check the engine oil and engine fuel levels and add as necessary to prepare the unit for its next use.
11. Flush and drain the hoses; coil for restowing.
12. Spray the interior, exterior, and face of the pump's discharge, suction inlet and impeller with a silicone lubricant spray.
13. Allow the entire contents to dry before sealing it into the storage container.
14. Return unit to its ready state for its next usage.
15. Restow the pump unit and hoses in the pump kit container.

**WARNING:** If any problems with the pump are encountered during or after operation, do not repack the pump. Notify maintenance personnel of any problems encountered during or after operations.

**Read and Understand the Honda GX200 Engine's Owner's Manual Before Operating This Unit**

## Switching Fuel Tanks While The Engine Is Running:

**DANGER: CONTENTS OF THE FUEL CAN ARE FLAMMABLE OR COMBUSTIBLE VAPORS CAN EXPLODE. HARMFUL IF SWALLOWED.**

**If swallowed, do not induce vomiting, call physician.**

**Keep out of reach of children.**

**Avoid prolonged breathing vapors.**

**Do not siphon by mouth.**

**Do not refill or store in vehicle, aircraft or living space.**

**Store and use in a well-ventilated area.**

**Vapors can be ignited by a spark or flame source. Keep away from flame, pilot lights, stoves, heaters, electric motors, and other sources of ignition.**

**Keep container closed when in use.**

**Fill without spilling.**

1. Have a fuel can filled with 86 octane or higher gasoline close by, ready to be installed.  
WARNING: Keep all fuel cans and gasoline away from the exhaust muffler and the path of the exhaust, to avoid possible combustion.
2. Disconnect the two fuel tank retaining straps.
3. NOTE: After this step you will have approximately 30 seconds to do steps 4 and 5 before the engine stops.  
Disconnect the fuel line from the spent fuel can by pressing the metal tab on the female quick disconnect on the fuel can and pull out on the male fitting on the fuel line.
4. Replace the spent fuel can with the full fuel can so that the end of the fuel can with the fuel fitting is closest to the throttle.
5. Connect the fuel line to the full fuel tank by pushing the male quick disconnect on the fuel line into the female quick disconnect on the fuel tank.
6. Reconnect the two fuel tank retaining straps.

**NOTE:** For optimal engine performance and engine life, always use strained or filtered gasoline with an octane rating of 86 or higher.

**NOTE:** The fuel tank contains adequate fuel for four hours of run time.

## Preparation for Priming

- If not already connected, connect the fuel hose from the engine to the fuel tank fitting.  
**To connect the fuel hose:**
  - Slide the male fuel fitting on the fuel hose, into the female fuel fitting on the fuel tank. The lock will be seated in the groove in the fitting on the hose when fully engaged.
- Open the fuel valve by pushing the black fuel valve lever to the right to the “ON” position. The fuel valve lever is the black lever located lowest on the engine’s carburetor assembly.
- Connect the suction hose to the pump. Latch the couplings by pushing the coupling’s handles towards the hose until the handles are against the coupling.
- Be certain that the suction hose is absolutely airtight. The pump will not lift water if the suction side of the pump has the slightest air leak.
- A strainer with openings not larger than 1/4 inch must always be used on the end of the suction hose to avoid sucking debris into the pump. Debris can clog the impeller and cause the pump to not work.
- Avoid air traps in suction hose if possible.
- If pumping from a shallow water source, stream, or pond, keep the suction intake strainer well above the bottom to prevent sucking up soil and other foreign matter. If the strainer must lie on the bottom, a metal plate or pan should be laid under it.
- The suction intake should be several inches below the surface of the water to prevent sucking in air. A hard flat object laid over the top of strainer like a cover will allow the pump to operate in shallow water.
- Connect the discharge hose to the pump and position the hose to discharge overboard. Secure the end of the hose to prevent it from moving.
- This unit is designed to achieve optimal performance with 3” suction and discharge hoses, however any size of suction and discharge hose may be used, depending on the volume of water required.
- Turn the engine ignition switch clockwise to the “ON” position. The engine ignition switch is the red switch located below the fuel tank bracket on the same side of the engine as the hand primer.
- If the engine is cold, it may be necessary to use the choke to get the engine started. Pushing the choke lever to the left will “CHOKE” the engine. The choke lever is the gray colored, middle lever on the carburetor assembly.
- Set the engine throttle lever at about 1/3 open, or in the “START” position by pushing it from the far right to the left about 3/4 of an inch. The throttle is the largest of the three levers and located highest on the carburetor assembly.
- Do not start the engine until everything is ready for pumping, with the hose couplings properly latched, the fuel line connected, fuel valve turned on, ignition switch turned on, and the pump primed.

## Priming and Starting The Pump

After the pump is prepared:

Prime the pump by briskly cycling the primer in and out. This is done by quickly pulling the hand primer handle out and pushing it back in many times until water comes out the hand primer cylinder cap. The hand primer is the tubular device attached to the right side of the fuel tank bracket when looking at the engine from the recoil end. [Note: The approximate priming time will vary between 10 and 60 seconds depending upon size and length of suction hose, height above water source, and hand primer cycle rate.]

Start the engine by pulling the recoil starter rope fast and hard. It may require more than one pull to start the engine. If the recoil starter is broken, or breaks before the engine starts, see **“Emergency Starting with a Broken Recoil Starter.”**

**Note:** The ignition and fuel valve must be in the “ON” position.

Run engine at about 1/2 open throttle position and shut the choke off by pushing the choke lever all the way to the right.

The pump should now be pumping water; if it is not, cycle hand primer a few more times until discharging begins.

Once the pump is primed and discharging water, slowly open the engine throttle to the “FULL OPEN” position by pushing the throttle lever to the left. The engine can be run at less than full throttle if desired for reduced discharge flow rates.

### Emergency Starting with a Broken Recoil Starter

Once the engine is prepared for starting, remove the three thumbscrews that hold the recoil starter to the engine.

Remove the recoil starter. With the recoil starter removed, the flywheel and starter sheave will be exposed.

Place the knot of the spare starter rope in the notch in the flywheel starter sheave.

Wrap the spare starter rope clockwise around the flywheel starter sheave.

Keeping hands, feet, loose clothing, jewelry, etc. away from exposed flywheel, sheave, and all other moving parts; pull fast and hard on the spare starter rope to turn the engine flywheel quickly.

**NOTE:** It may be necessary to repeat this procedure a few times, until the engine starts.

**WARNING: With recoil starter removed, the flywheel is exposed. Extra care must be taken by the operator to avoid being caught and injured by moving parts!**

### Emergency Shutdown

In case of an emergency, the spark plug cap incorporates a handle which is to be used to pull the spark plug cap off the spark plug to shut the unit down.

Other alternative means for shutting down the engine include closing the fuel valve or disconnecting the fuel line. The engine will shut down in approximately 30 seconds.



## **Running and Maintaining the Pump and Engine**

- Read and understand the Honda GX200 Engine's Owner's Manual supplied by Honda.
- The fuel hose from the engine to the fuel tank fitting must be connected.  
**To connect the fuel hose:**
  - Slide the male fuel fitting, on the fuel hose, into the female fuel fitting on the fuel tank until the metal lock is seated in the groove in the fitting on the hose.**To Disconnect the fuel hose:**
  - Squeeze and hold the metal fitting lock button on the fuel fitting on the fuel tank
  - Pull the two halves of the fuel fitting apart.
  - Release the metal lock button.
- The fuel valve must be open, or in the "ON" position to run.
- The engine ignition must be in the "ON" position to run.
- Start the engine with the throttle about 1/3 open.
- Never run the pump at high speeds at any time unless it is discharging water.
- Once the pump is discharging water, to increase the flow of water from the discharge, slowly open the engine throttle, until the throttle is "FULL OPEN", by pushing the throttle to the left.
- The engine requires the use of unleaded gasoline with an octane rating of 86 or higher.
- Automotive 4 stroke SAE 10W-30 detergent oil is recommended for the engine for general operation. See the Honda GX200 Engine Owner's Manual for oil recommendations for adverse operating conditions.
  - Check the engine oil level prior to each use. Add oil as necessary.
  - Change the engine oil after the first 20 hours; then every 100 hours, or 6 months thereafter.
- Replace the inline fuel filter after the first 20 hours; then every 100 hours, or 6 months thereafter.
- Clean the carburetor sediment cup during every oil change, or more frequently if necessary. The carburetor sediment cup is the smaller cup, located directly below the fuel valve.
- Check the air filter for cleanliness prior to each use. Clean or replace every 100 hours or as needed.
- Clean and readjust the spark plug every 100 hours.
  - Recommended spark plug is an NGK # BPR6ES or equivalent.
  - The spark plug electrode gap should be .028-.031 in. (.70-.80mm).
- After each use, return the pump unit to its ready state so that it is prepared for the next emergency.
  - Check engine oil level and add as necessary.
  - Refill the fuel tank.
  - Check the air cleaner for cleanliness and clean or replace if necessary.
- For more in-depth engine operation and maintenance, refer to the Honda GX200 Engine Owner's Manual supplied by Honda.
- After each use in salt or brackish water, the pump and primer must be flushed with fresh water.
- After each use, (and after flushing), drain the pump by tipping the unit toward the pump's discharge. After all water is drained, return the pump to its normal upright position.
- Flush and drain the hoses, and coil for restowing after each use.
- Spray the pump's discharge, inlet, and impeller with silicone lubricant spray.
- Spray the fitting cams of the suction and discharge hoses with silicone lubricant spray.
- Allow the entire contents to dry before sealing it into the storage container.

**IF FURTHER INFORMATION IS NEEDED, CALL W.S. DARLEY & CO. IN  
CHIPPEWA FALLS, WI. AT 800-634-7812 or 715-726-2650**

## Pump and Engine Quick Reference Information and Preventative Maintenance Guide

<b>Fuel</b>	<b>Type</b>	<b>Unleaded gasoline with octane rating of 86 or higher</b>
	<b>Capacity</b>	<b>3 Gallons (4 hours of run time)</b>
<b>Engine Oil</b>	<b>Type</b>	<b>SAE 10W-30</b>
	<b>Capacity</b>	<b>.63 US qt</b>
<b>Carburetor</b>	<b>Idle speed</b>	<b>1400 rpm</b>
	<b>High speed</b>	<b>3900 rpm +200/-150</b>
<b>Spark plug</b>	<b>Type</b>	<b>NGK BPR6ES</b>
	<b>Gap</b>	<b>0.028-0.031 in (0.70-0.80 mm)</b>
<b>Maintenance</b>	<b>Before each use</b>	<b>Check engine oil level Add if necessary</b>
		<b>Check air filter Clean if necessary</b>
	<b>After each use</b>	<b>Flush the pump with fresh water</b>
		<b>Flush the primer with fresh water</b>
		<b>Drain the pump</b>
		<b>Purge the primer</b>
		<b>Flush, drain, and coil hoses for restowing</b>
		<b>Spray interior, exterior, and face of the pump discharge with silicone lubricant spray</b>
		<b>Spray interior, exterior, and face of the pump inlet &amp; impeller with silicone lubricant spray</b>
		<b>Spray fitting cams of suction and discharge hoses with silicone lubricant spray.</b>
		<b>Check the fuel fitting o'ring, and replace if damaged</b>
		<b>Allow entire contents to dry before sealing into storage container.</b>
		<b>Refill fuel tank</b>
	<b>First 20 hours</b>	<b>Change engine oil</b>
		<b>Replace the inline fuel filter</b>
	<b>Every 100 hours or every 6 months</b>	<b>Change engine oil</b>
		<b>Replace the inline fuel filter</b>
		<b>Clean carburetor sediment cup</b>
		<b>Clean or replace air cleaner</b>
		<b>Clean and readjust sparkplug</b>
		<b>Lube primer cup and stem with silicone based or marine grade grease</b>
	<b>Every 300 hours or every 1 year</b>	<b>Replace paper air filter element</b>
		<b>Replace spark plug</b>
		<b>Check idle speed and adjust if necessary</b>
		<b>Check and adjust valve clearance</b>
		<b>Clean fuel tank</b>

## Packing The Pump Unit & Accessories Into The Kit Container



**Note:** The entire contents of the kit container are to be dry before sealing the kit container.

1. Perform all applicable maintenance to the pump unit.
2. Open two open plastic bags into the kit container – one inside the other.
3. The 20' discharge hose must be rolled into a coil approximately 8 to 12 inches long when pressed flat. The coupling will need to be on the outside of the coil.
4. The discharge hose, along with two desiccant bags, are then laid into the kit container, inside the two plastic bags, so when pressed against the side farthest from you, the bulk of the hose is about half way between the kit container handles, along the outer edge. The coupling will be laid out to rest directly under the kit container handle to the left.
5. Tie the emergency start rope to the lifting area of the roll base.
6. The pump unit is set into the plastic bags so that the fuel tank is above the bulk of the discharge hose and the discharge hose coupling is directly under the suction inlet of the pump. The pump unit holds the discharge hose to the side, but does not rest on it, as shown in the picture above. Secure the inner plastic bag with rubber band, or light twine. (Note: the plastic bags have been omitted from these pictures for clarity.)



7. **The suction strainer on the 15' suction hose is inserted between the kit container, and the pump unit discharge, and exhaust shield!**
8. Pushing the suction hose down as far as it will go between the kit container and the fuel tank, the suction hose is coiled around the inside of the kit container, as shown in the photo above. Approximately 2 raps of suction hose will fit along side the fuel tank, one on top of the other.



9. Continue coiling the suction hose as shown above. The coupling will fit into the center of the kit container as shown.
10. Secure the outer plastic bag with rubber band, or light twine.



11. The flashlight, and laminated instruction card lay on top of the outer plastic bag so that they do not interfere with the kit container cover, as shown above.
12. Install the kit container cover and locking ring.

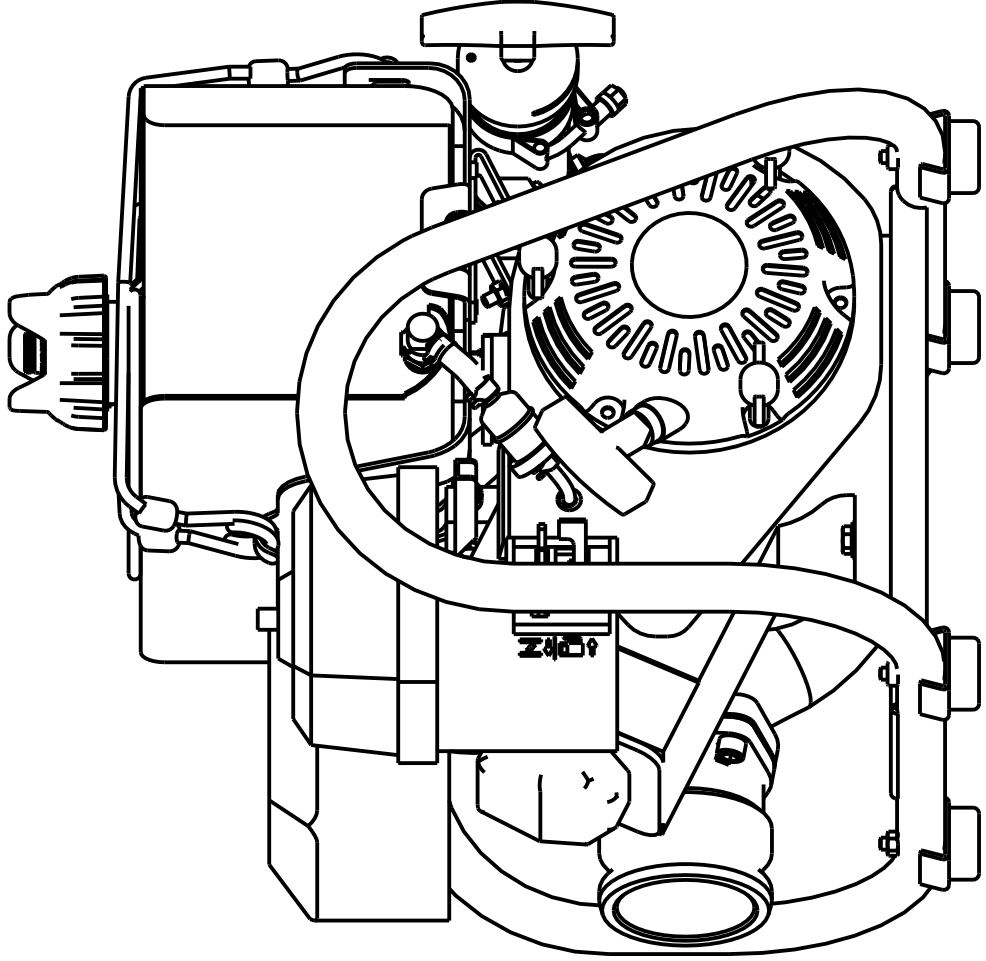
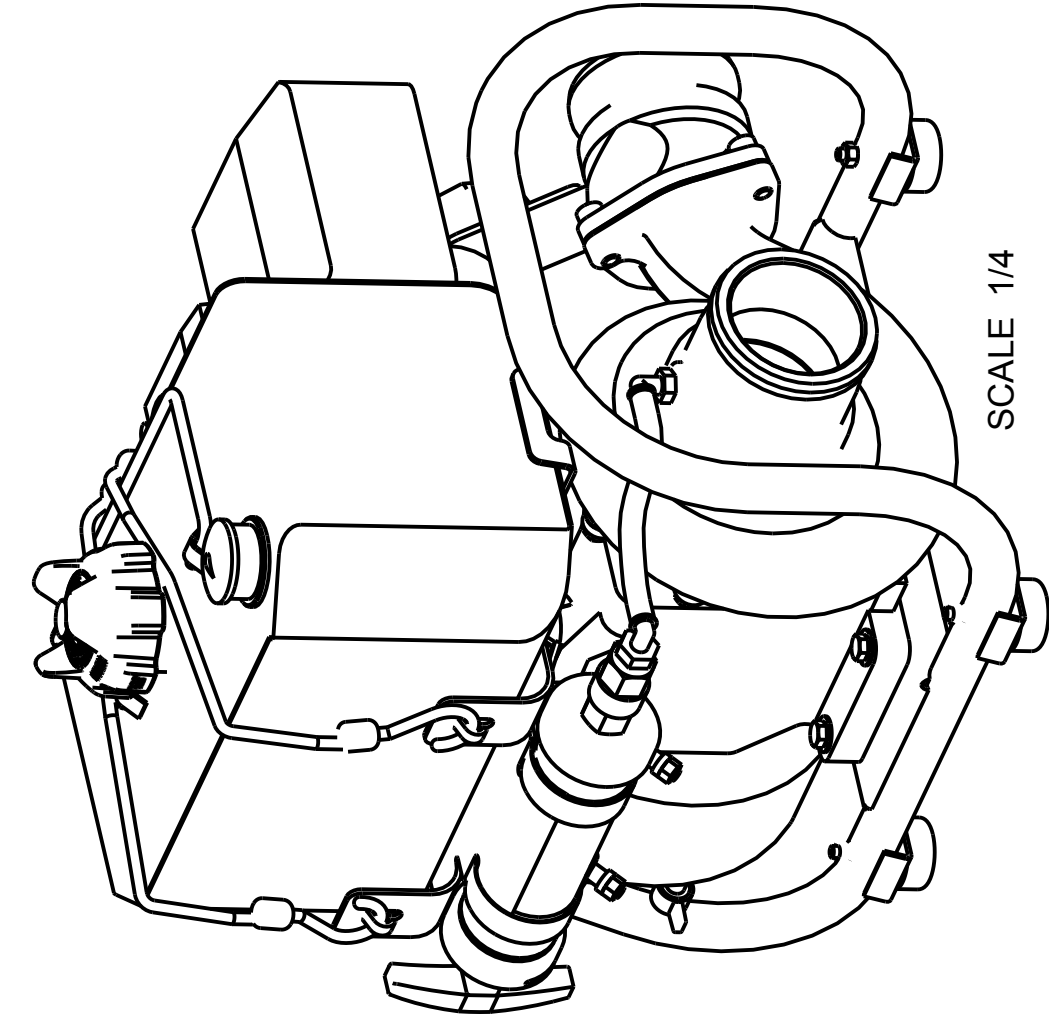
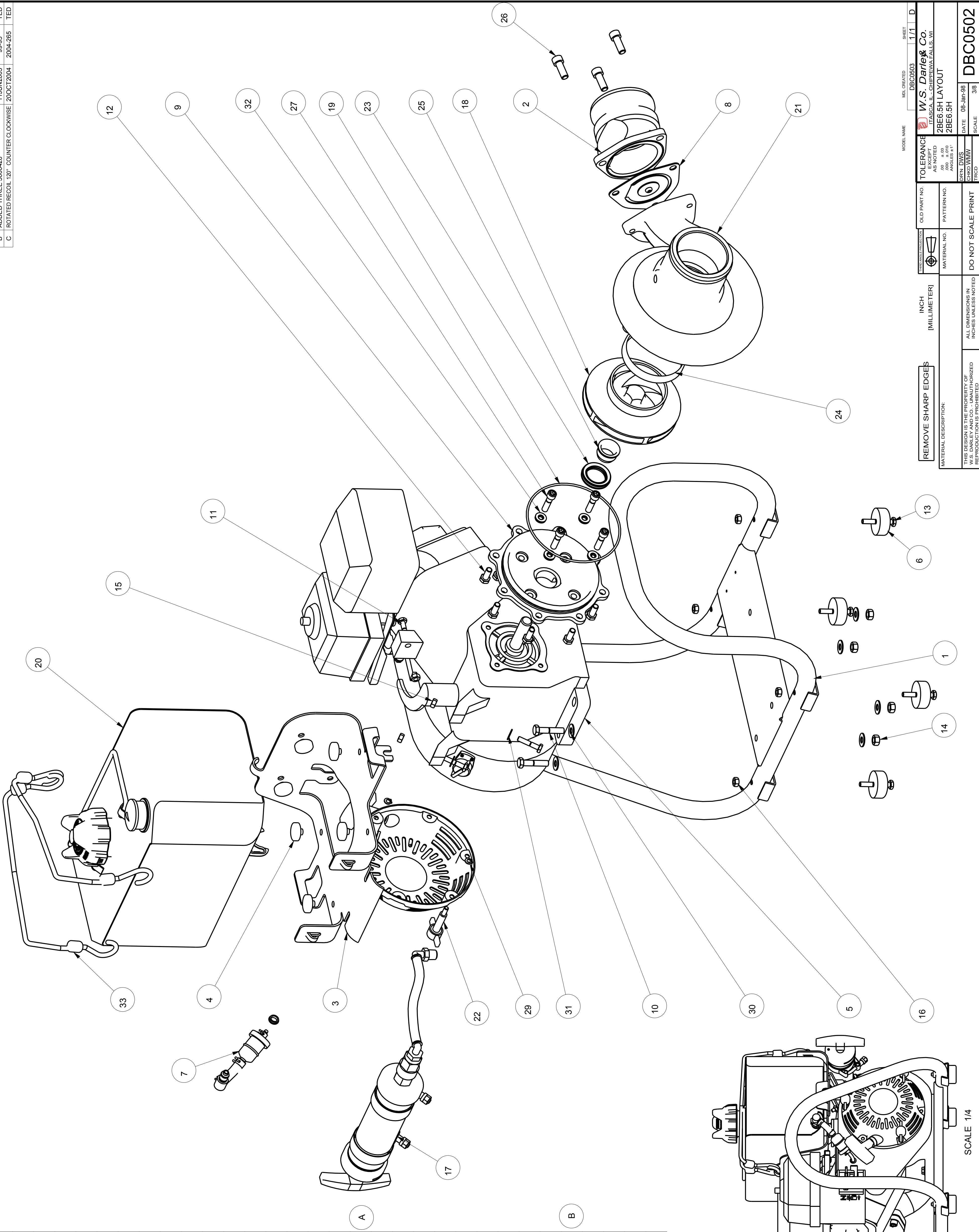
## **Unpacking The Pump Unit & Accessories From The Kit Container**

1. Remove the kit container locking ring and cover.
2. Remove the flashlight, and laminated instruction card from the kit container.
3. Open the outer plastic bag.
4. Grab the suction hose by the coupling, and pull it out until all that is left in the kit container is that which was inserted under the engine's exhaust.
5. Lift the pump unit out of the kit container. This will bring the remainder of the suction hose out of the kit container.
6. Open the inner plastic bag.
7. Remove the discharge hose from the plastic bag.



NO.	DESCRIPTION	PART NO.	QTY
1	BASE - 2BE6.5H	1683500	1
2	BODY - DISCH CHK VALVE 3IN	2056001	1
3	BRACKET - FUEL TANK MOUNT	4025803	1
4	BUMPER - 1.00 OD x .25 HIGH	4401721	6
5	ENGINE - HONDA, GX200, 6.5 HP	4216410	1
6	FOOT - RUBBER BASE	4405100	4
7	DWG - FUEL HOSE ASSEMBLY	KE00110	1
8	GASKET - DISCH CHECK VALVE ASSY	3821301	1
9	HEAD - INBOARD	2810001	1
10	HHCS - .313-18 x 1.50, SST	5400613	4
11	HHCS - .250-20 x 1.25, SST	5400637	3
12	HHCS - .313-18 x 0.75, SST	5400641	8
13	HHCS - .250-20 x 1.75, SST	5400650	4
14	NUT - HEX, .313-18, NYLOC, SST	5403400	4
15	NUT - HEX, .250-20, NYLOC, SST	5403403	3
16	NUT - HEX, .250-20, SST	5403501	4
17	DWG - HAND PRIMER, 2BE6.5H	AP00314	1
18	IMPELLER	2907700	1
19	O-RING - 5.25 x 5.44 x 0.09	3601117	1
20	KIT - GAL 3 FUEL TANK ONLY	KE00109	1
21	PUMP CASING - 2BE6.5H	2055901	1
22	SCREW ASSEMBLY - TEE KNOB	5402902	3
23	SEAL - FURON MECHANICAL, 1.12	1843400	1
24	SEAL RING, 2BE6.5H	3407000	1
25	SLEEVE - SEAL	1843300	1
26	SHCS - .375-16 x 1.00, SST	5401410	3
27	SHCS - .313-24 x 1.25, SST	5401420	4
29	RING - RETAINER, STAINLESS	3600428	3
30	WASHER - FLAT, 0.31 ID, SST	3603812	8
31	WASHER - FLAT, 0.25 ID, SST	3603814	2
32	WASHER - SS/RUBBER SEAL	3603915	4
33	TIE-DOWN, POLY 12	4427100	2

REVISIONS			
LTR	DESCRIPTION	DATE	CHG NO. / APPRCD
A	2907700 WAS 2907701	11JUN2003	99-95 TED
B	ADDED THREE 3600428	11JUN2003	99-95 TED
C	ROTATED RECOIL 120° COUNTER CLOCKWISE	20OCT2004	2004-265 TED



SCALE 1/4

SCALE 1/4

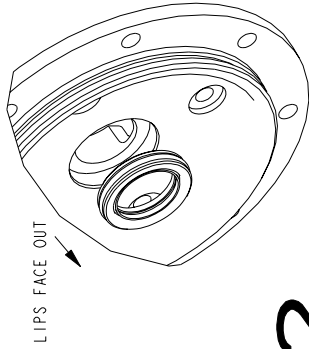
MODEL NAME		INCH		REMOVE SHARP EDGES		ALL DIMENSIONS IN INCHES UNLESS NOTED	
W.S. Darley & Co.		[MILLIMETER]		MATERIAL DESCRIPTION		DO NOT SCALE PRINT	
TASCA, IL - CHIPPewa FALLS, WI		TOLERANCE		OLD PART NO.		DATE	
2BE6.5H LAYOUT		AS NOTED		PATTERN NO.		08-Jan-98	
2BE6.5H		.00 ±.03 ANGLES 90°		MATERIAL NO.		SCALE	
DBN DWS		CHGO MMW		TRCD		3/8	
THIS DESIGN IS THE PROPERTY OF W.S. Darley & Co. UNAUTHORIZED REPRODUCTION IS PROHIBITED.		DO NOT SCALE PRINT		DO NOT SCALE PRINT		DBC0502	



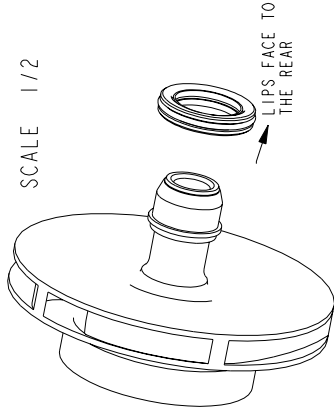
NO.	DESCRIPTION	PART NO.	QTY.
1	HEAD - INBOARD	2810001	1
2	IMPELLER	2907700	1
3	SEAL - FURON MECHANICAL, 1.12	1843400	1
4	SLEEVE - SEAL	1843300	1

A  
B C

SCALE 1/2



SCALE 1/2



1

PREFORM THE SEAL AS FOLLOWS:  
PLACE A THIN COATING OF OIL OR GREASE ONTO THE SEAL SLEEVE.

USING CARE NOT TO DAMAGE THE SEAL OR SLEEVE, SLIDE THE SEAL ONTO THE IMPELLER SEAL SLEEVE SO THAT THE SEAL LIPS ARE FACING AWAY FROM THE IMPELLER. (THIS IS REVERSED FROM NORMAL OPERATING ORIENTATION)

LEAVE THE SEAL ON THE SLEEVE FOR 2 MINUTES ALLOWING THE LIPS TO TAKE SHAPE.

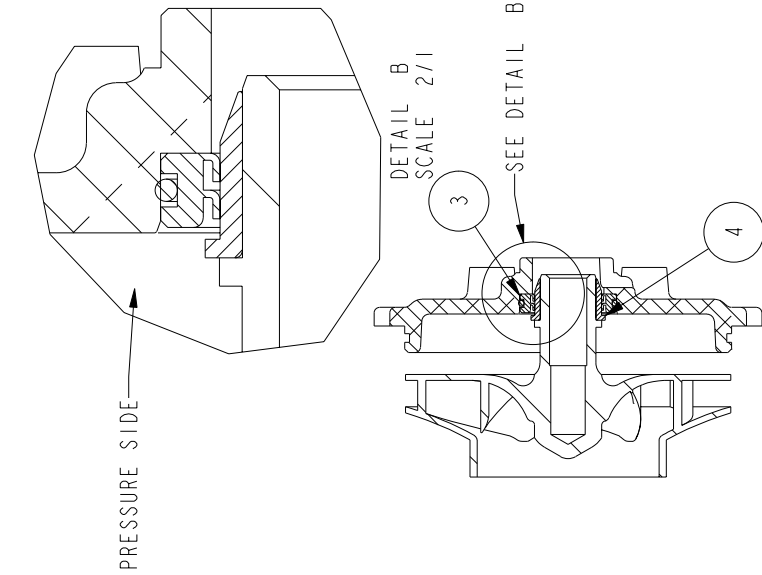
2

REMOVE SEAL FROM IMPELLER SEAL SLEEVE  
APPLY A THIN COAT OF OIL OR GREASE TO THE O.D. OF THE SEAL.

REFER TO DETAIL B TO CONFIRM PROPER ORIENTATION OF SEAL LIPS. NOTE THAT INTERNAL PUMP PRESSURE IS EXERTED ON THE INSIDE OF THE CUP FORMED BY THE SEAL LIPS.

USING AN ARBOR PRESS AND A ROUND BAR SLIGHTLY SMALLER THAN THE SEAL, PRESS THE SEAL INTO PLACE.

IMMEDIATELY ASSEMBLE INBOARD HEAD TO ENGINE AND IMPELLER TO SHAFT.



SECTION A-A  
SCALE 1/2

REVISIONS		MODEL NAME		MDL CREATED		SHEET	
LTR	DESCRIPTION	DATE	CHG NO.	APPR'D	1201004D	1/1	B
A	WAS 2810000	13APR99		WMW	W.S. Darley & Co.		
B	WAS 2907700	13APR99		WMW	MELROSE PARK, IL - CHIPPEWA FALLS, WI		
C	WAS 2907701	11JUN99		TED	INSTRUCTIONS - SEAL		
					INSTALLATION, 2BE6.5H		
					DATE08-Feb-98		
					SCALE 5/16		
					1201004		

TOLERANCE		OLD PART NO.		PATTERN NO.	
EXCEPT AS NOTED					
.000 ± .010					
ANGLES ±1°					
DR 'N DWS					
CHD					
TRCD					
DO NOT SCALE		PRINT			

REMOVE SHARP EDGES

INCH [MILLIMETER]

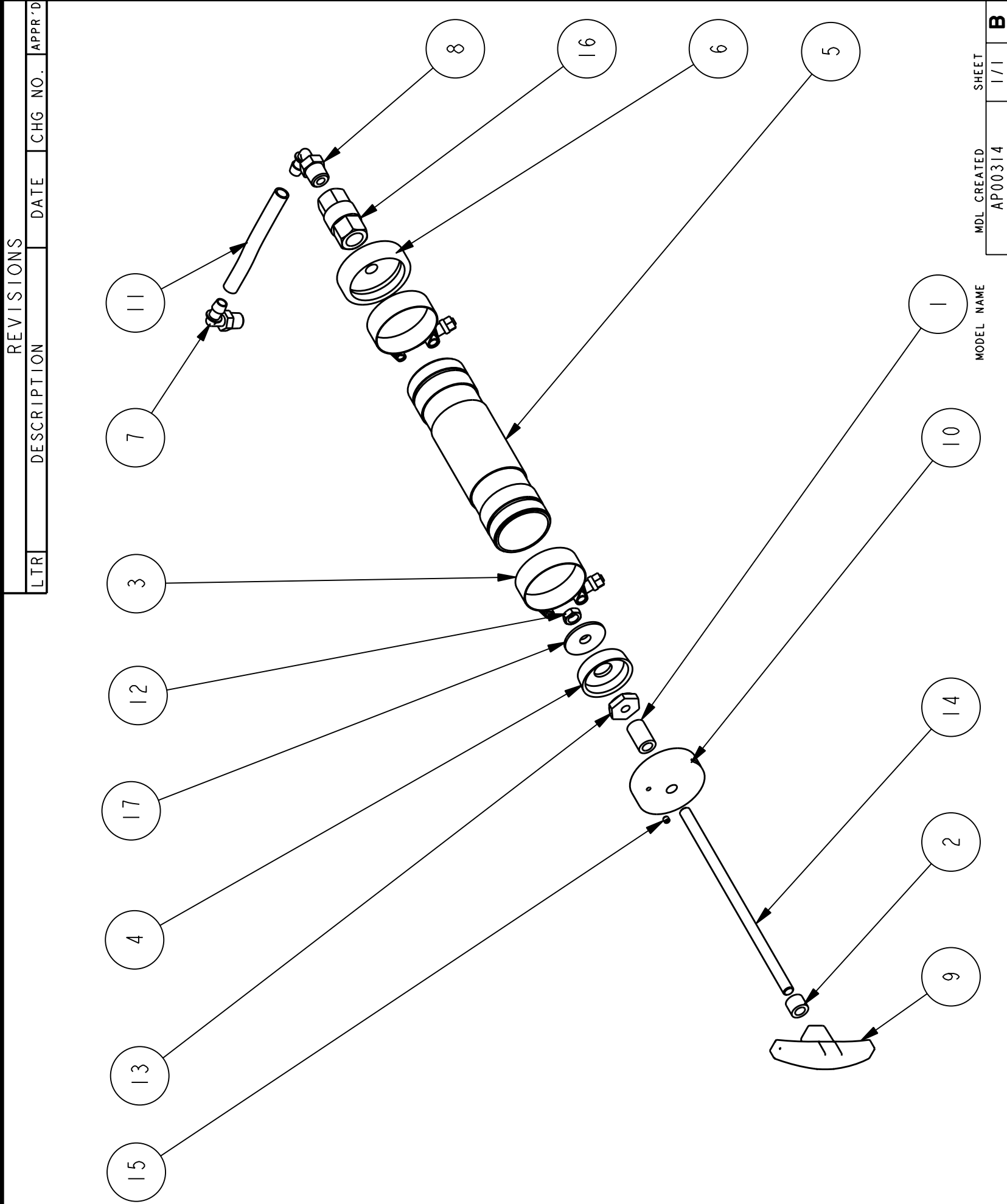
MATERIAL DESCRIPTION:

THIS DESIGN IS THE PROPERTY OF W.S. DARLEY AND CO. - UNAUTHORIZED REPRODUCTION IS PROHIBITED

ALL DIMENSIONS IN INCHES UNLESS NOTED



NO.	DESCRIPTION	PART NO.	QTY.
1	BUMPER - PRIMER, HAND	4426300	1
2	BUMPER - PRIMER, HAND	4426301	1
3	CLAMP - T-BOLT, 2.12 SST	4402621	2
4	CUP - PISTON, 1.88 OD x 1.63 ID	4405700	1
5	CYLINDER - HAND PUMP	1020602	1
6	END CAP - PRIMER	2501803	1
7	FITTING - BARB,.38ID H X 1/4NPT	3502010	1
8	FITTING - BARB,.38ID H X 3/8 NPT	3502011	1
9	HANDLE - HAND PRIMER	3001002	1
10	HEAD - CYLINDER, HAND PRIMER	2802502	1
11	HOSE - VACUUM, .38 ID X 5.31	4402392	1
12	NUT - JAM, .375-16, SST	5403207	1
13	NUT - PISTON, HAND PRIMER	5403467	1
14	ROD - PISTON, .375	1041001	1
15	SSS - NO.10-24 x 0.19, SST	5402627	1
16	VALVE - CHECK, .38	5201704	1
17	WASHER - 0.41 x 1.50 x .19 DELRN	3603716	1



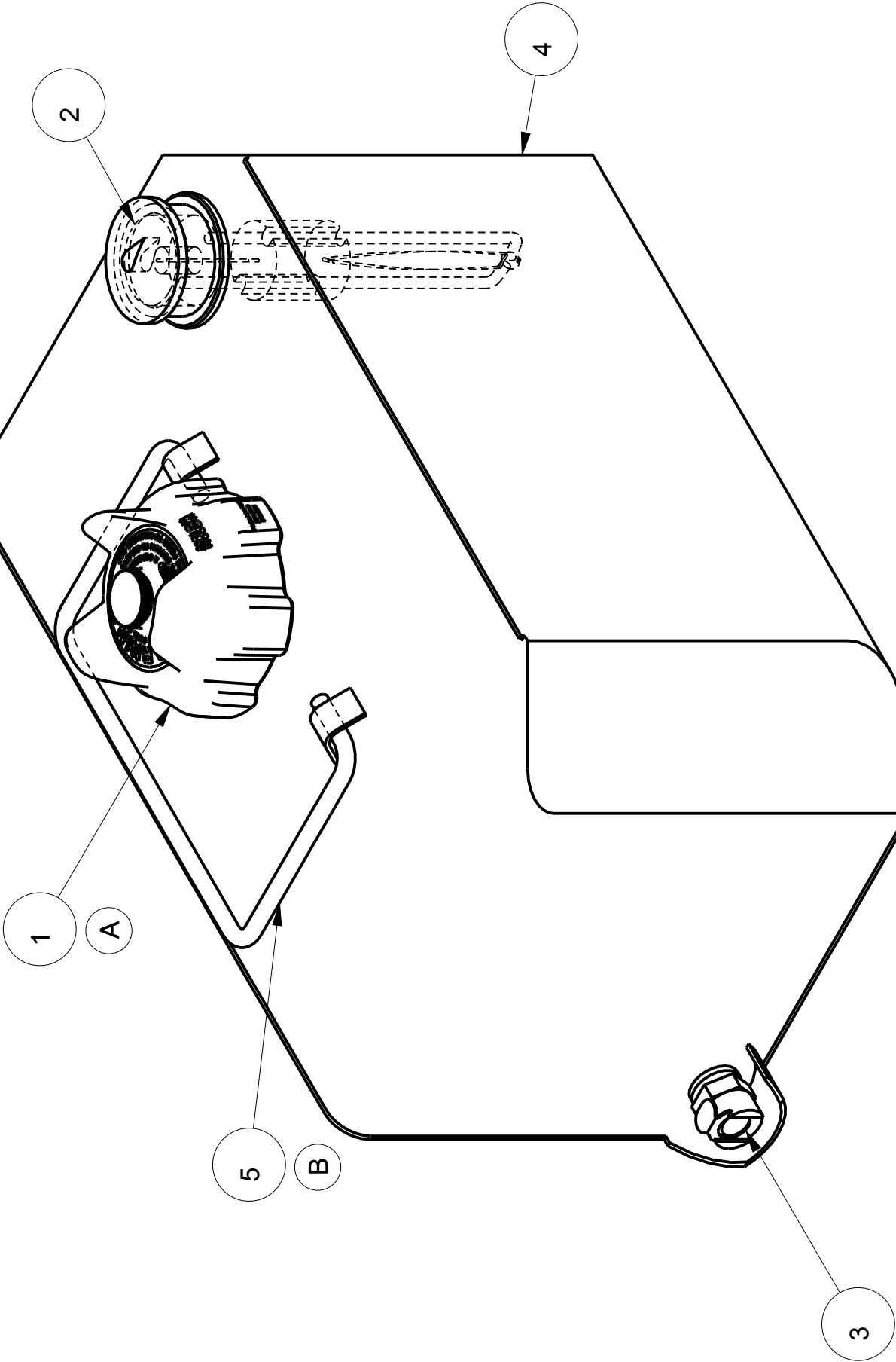
TOLERANCE EXCEPT AS NOTED .00 ±.03 .000 ±.010 ANGLES ±1°		W.S. Darley & Co. MELROSE PARK, IL - CHIPPEWA FALLS, WI	
DR'N DWS		DWG - HAND PRIMER, 2BE6.5H EXPLODED VIEW	
CHKD WMW		DATE01-Mar-99	
TRCD		SCALE 1/4	

DGC0214

NO.	DESCRIPTION	PART NO.	QTY.
1	CAP - FUEL TANK, RATCHET CAP	4217718	1
2	GAGE - REMOTE	4217713	1
3	CONNECTOR - QUICK, FEMALE	4403806	1
4	FUEL TANK - 2BE6.5H	4217707	1
5	HANDLE - ALUM. FUEL TANK	4217719	1

A

B



REVISIONS

LTR	DESCRIPTION	DATE	CHG NO.	APPR'D
A	4217718 CAP WAS 4217712	8SEP2011	7689	EAS/TED
B	4217719 HANDLE WAS 4217711	8SEP2011	7689	EAS/TED

MODEL NAME	MDL CREATED	SHEET
KE00109	02APR1999	1 / 1

THIRD ANGLE PROJECTION		OLD PART NO.	TOLERANCE	
			EXCEPT AS NOTED	
MATERIAL NO.		PATTERN NO.	.00 ±.03	
KE00109		-	.000 ±.010	
DO NOT SCALE PRINT			ANGLES ±1°	
REMOVE SHARP EDGES			DRN DWS	
MATERIAL DESCRIPTION:			CHKDMMW	
-			TRCD	
THIS DESIGN IS THE PROPERTY OF W.S. DARLEY AND CO. - UNAUTHORIZED REPRODUCTION IS PROHIBITED		ALL DIMENSIONS IN INCHES UNLESS NOTED	DATE 08-Sep-11	
			SCALE 1/2	
			DGM1108	

		W.S. Darley & Co.	
		ITASCA, IL - CHIPPEWA FALLS, WI	
		KIT - GAL 3 FUEL TANK ONLY	
		2BE6.5H	

NO.		DESCRIPTION	PART NO.	QTY.
1		CLAMP-SPRING, .38 FUEL LINE	4403325	1
2		CLAMP - SPRING, .50 FUEL LINE	4403343	2
3		CONNECTOR - QUICK, MALE, 90DEG	4403807	1
4		FILTER - INLINE FUEL	4207201	1
5		GROMMET - .38 ID x .50 MTG	4401722	1
6		HOSE - FUEL, 0.25 ID x 1.75	4430903	1

NOTE:  
ITEM #4 PRESSED INTO  
HOLE FOR FUEL LINE  
IN THE ENGINE  
COOLING SHROUD

FUEL LINE FROM ENGINE  
SUPPLIED WITH ENGINE

REMOVE SHARP EDGES

INCH  
[MILLIMETER]

EVERY FUEL HOSE MUST BE

TOLERANCE  
EXCEPT  
AS NOTED  
- .00 ± .03  
ANGLES ± 1°

OLD PART NO.

PATTERN NO.

MATERIAL NO.

DO NOT SCALE PRINT

ALL DIMENSIONS IN  
INCHES UNLESS NOTED

THIS DESIGN IS THE PROPERTY OF  
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REPRODUCTION IS PROHIBITED

DR'N DWS  
CHKD WWF  
TRCD

DATE 20-Jul-98  
SCALE 1/1

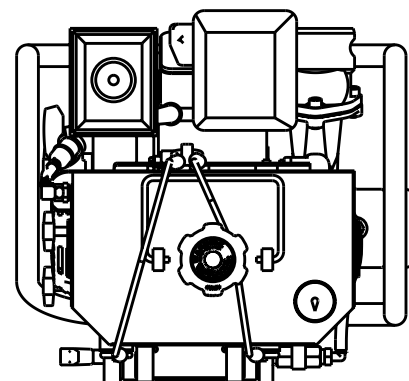
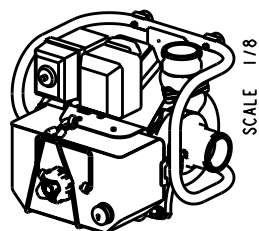
MODEL NAME  
KE00110  
SHEET  
1/1

W.S. Darley & Co.  
ITASCA, IL - CHIPPEWA FALLS, WI

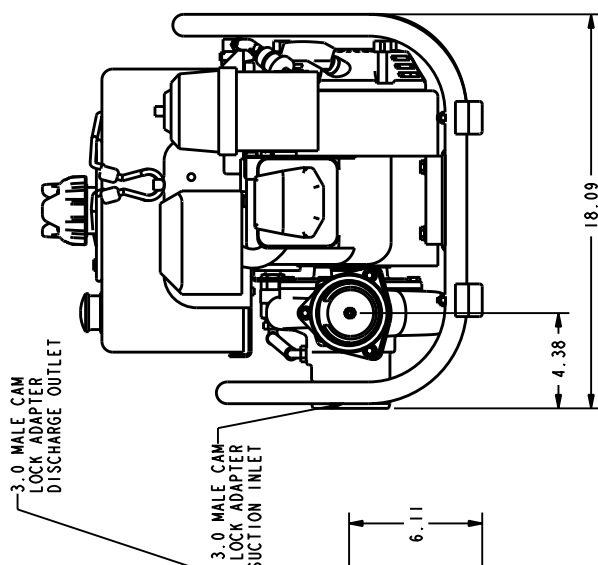
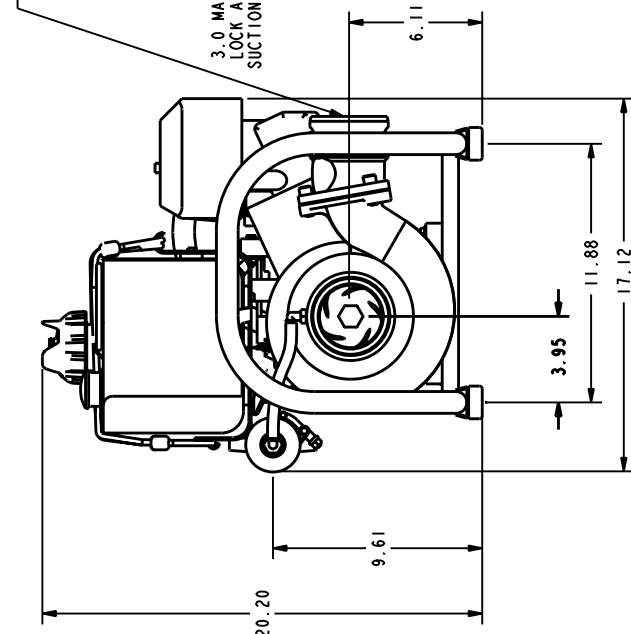
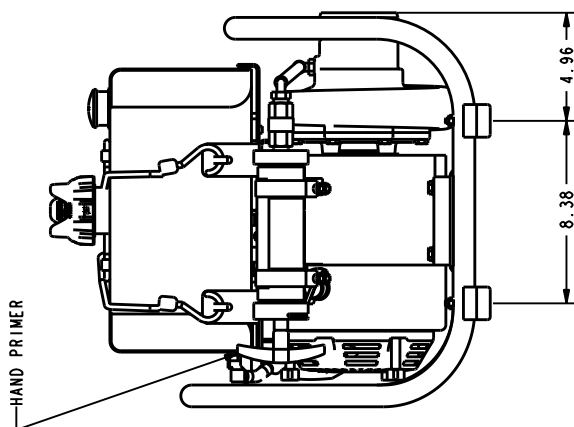
DWG - FUEL HOSE ASSEMBLY  
2BE6.5H

DGM1109




REVISIONS			
LTR	DESCRIPTION	DATE	CHG NO.
A	CHANGED MATERIAL TO ACT. PART #	13JAN05	HAL
B	4403343 WAS 4403326	13MAR2008	2008-092



2.5 GAL. REMOVABLE FUEL TANK



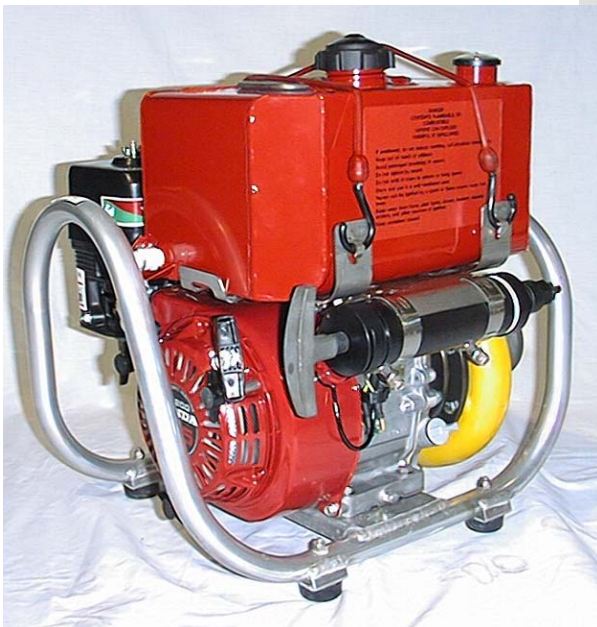
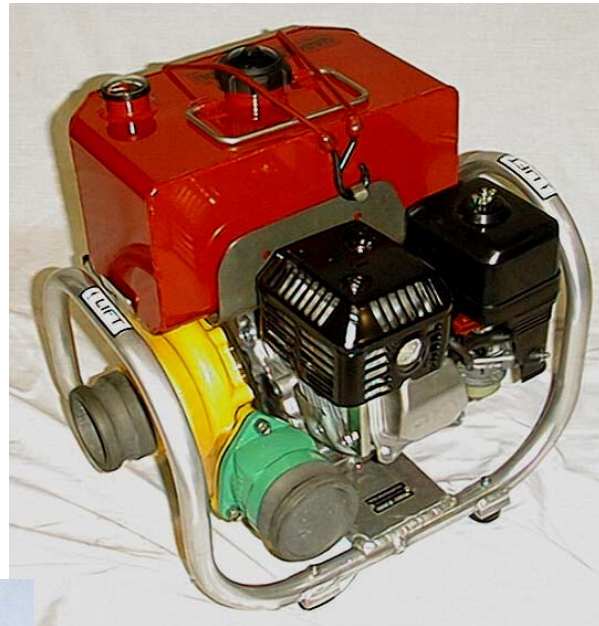
APPROX. WEIGHT, WET: 55 LBS

	REMOVE SHARP EDGES	INCH [MILLIMETER]		NEW PART NUMBER OLD PART NO.	TOLERANCE ALLOWED .004 +.009 .004 MIN. .009 MAX.	 W.S. Darley & Co. MAS. - CHIPPERS FALLS, WI.	DBC0302 1/11	DATE CREATED 1/11	SHEET
	MATERIAL DESCRIPTION: THIS DESIGN IS THE PROPERTY OF W.S. DARLEY & CO. ANY REPRODUCTION OF THIS DESIGN WITHOUT THE PERMISSION OF W.S. DARLEY & CO. IS PROHIBITED.	ALL DIMENSIONS IN INCHES UNLESS NOTED	MATERIAL NO. PART NO.	PUMP - 286.5H DIMENSIONAL	DATE 02-Mar-99	SCALE 1/4	DBC0302		



**Darley  
2BE6.5H Portable  
Dewatering/Fire Fighting Pump  
Unit**

**Manufactured by  
W.S. Darley & Company in  
Chippewa Falls, WI, U.S.A.**



# **W.S. Darley & Co.**

## **Repair Service Instructions**

### **Type 2BE6.5H Portable Pump**

#### **Suggested Tools, Supplies, and Support Equipment for Performing Repairs & Overhaul**

- 3/16" Deep Socket
  - 7/16" Wrench
  - 7/16" Deep Socket
  - 1/2" Wrench
  - 1/2" Socket with Flexible Drive
  - 9/16" Wrench
  - 5/8" Wrench
  - Standard Spark Plug Wrench  
(or 13/16 Deep Socket)
  - 1" Open End Wrench
  - 1" Socket and Impact Wrench
  - 3/32" Allen Wrench
  - 1/4" Allen Wrench  
(or 1/4" Allen Socket)
  - 5/16" Allen Wrench  
(or 5/16 Allen Socket)
  - Torque Wrenches (in-lb & ft-lb)
  - Hammer
  - 1/8" Machinist Punch
  - Pliers
  - Adjustable Wrench
  - 2 1/2" Long or Longer Socket Extension
  - Metric Wrench (10mm)
  - 10mm Deep Socket
  - Arbor Press
  - Flywheel Puller (outside grip)
  - Hand Held Tachometer (inductive type)
  - Camlock Cap w/Vacuum Gauge
  - Split Clamshell Type Puller
  - X4872 Seal Sleeve Press Tool  
(see drawing at the end)
  - X4926 Seal Pressing Tool (Metal Bar, 1.5"  
Diameter about 3" long with 3/4" drilled hole at  
least 2" deep)  
(see drawing at the end)
  - X4927 Seal Ring Tool (Piece of Metal,  
3.5" Diameter about 3/4" thick)  
(see drawing at the end)
  - Marine Grade Grease
  - Silicone Grease
  - Clear Silicone Adhesive
  - Silicon lubricant spray
  - Float Level Carburetor Adjustment Gauge
  - Idle Speed Adjustment Gauge
  - Special Angled Feeler Gauges
  - Corrosion Removal Brush (wire brush)
  - Paint Brush (for engine)
  - Corrosion Removal Fluid
  - High Flash Point Solvent
  - Detergent
  - Rags
  - Metal Primer Paint
- The following can be substituted by an equivalent  
of another brand:
- Loctite 243 Thread Locker
  - Loctite 603 Cylindrical Retaining Compound  
(Used for retaining press fits)
  - Loctite Klean "N" Prime
  - Krylon #1385 Red Insulating Varnish
  - Teflon Sealer/Lubricant

## Pump Disassembly for Overhaul

### Refer to Drawing DBC0502

1. Make sure that the engine ignition is turned "OFF."
2. Disconnect sparkplug wire from the sparkplug.
3. Loosen the two clamps [(3) Ref. Drawing DGC0214] and remove the hand primer assembly (17) by unscrewing the primer check valve from the elbow.

**Note:** If it is desired to remove the gas tank bracket and fuel tank assembly (20), the gas tank bracket can be removed with priming assembly (17) still attached after the primer hose is disconnected.

4. Remove eight 5/16 NC hex head cap screws (12) and remove the pump casing (21) from the inboard head (9). Discard o-ring (19).

**Note:** The bottom two cap screws can not be removed from the inboard head without removing the inboard head from the engine (5).

5. If necessary to replace, remove the seal ring (24) from the pump casing (21). Be careful not to damage the pump casing.
6. Remove the three thumbscrews (22) which hold the recoil starter to the engine. Remove the recoil starter.

**Note:** Step #6 can be eliminated if an impact wrench with a 1" socket is used to remove the impeller (18) in the next step.

7. Using an impact wrench with a 1" socket on the hex of the impeller, remove the impeller (18) by turning it counter clockwise
8. If necessary to replace, remove seal sleeve (25) from impeller hub (18).
9. If necessary to replace, remove four 5/16" socket head cap screws (27), sealing washers (32), and inboard head (9). Discard the four stainless steel sealing washers; never reuse them! Removal of the inboard head is not necessary for replacing the mechanical lip seal (23).
10. Pull or pry the mechanical lip seal (23) out of the inboard head (9). Discard seal.

### Parts Inspection and Measurement

1. Clean all parts and examine carefully for wear or deterioration. Replace any questionable parts. Use only stainless steel when replacing any fasteners, or washers.
2. If the check valve in the priming system is not sealing, inspect for debris trapped between the valve and its seat.
3. Inspect the seal sleeve (25) for grooves, pits, and scratches. Replace if damaged or worn.
4. Measure the impeller seal ring (18) and stationary seal ring (24) for wear. Use the following table for comparison:

Original impeller seal ring O.D. (18) -----	3.2991/3.2969"
Original seal ring I.D. (24) -----	3.316/3.314"
Original diametral clearance -----	.019/.015"
Maximum allowable diametral clearance -----	.025"

## Pump Assembly

### Refer to Drawing DBC0502

#### Assembly Tips:

- Before working on the unit, make sure the sparkplug wire is disconnected from the sparkplug, and the engine ignition switch is turned “OFF.”
- Do not apply Loctite products to any part more than five minutes before installing that part.
- Loctite products set up more quickly on brass parts; allow as little time as possible between application of Loctite and installation of part.
- When pressing one part into another, the parts must be started square with each other and pressed straight together to avoid galling.
- In step seven, the bottom two 5/16” NC hex head cap screws (12) used to attach the pump casing (21) to the inboard head (9) must be placed in their hole in the inboard head before installing the head to the engine (5).
- Using an impact wrench with a 1” socket to install the impeller (18) onto the engine shaft will normally eliminate the need for the flywheel wrench X4891. A slight nudge with an impact wrench is all that is required to seat the impeller. Do not exceed 30 ft-lb torque when installing the impeller.
- During assembly it may also be helpful to refer to drawing DBC0503. Keep in mind that the reference numbers listed in the text refer to drawing DBC0502.

#### Assembly

1. [Note: If not replacing the seal ring (24), go to step 3.]  
Apply Loctite 603 to the outer surface of the seal ring (24).
2. Using X4927 as an arbor, press the seal ring (24) into the pump casing (21) until it is seated.
3. [Note: If not replacing the seal sleeve (25), go to step 5.]  
Apply Loctite 603 to the outside diameter of the impeller hub (18).
4. Using press arbor X4872, press the seal sleeve (25) onto the impeller hub (18) with the beveled end of sleeve away from the impeller. Use extreme care not to scratch or otherwise damage the seal sleeve surface.
5. Install the mechanical lip seal (23). Refer to drawing 1201004 for in-depth instructions on how to do this without damaging the seal.

**Note:** If the inboard head (9) is still installed on the engine (5), the lip seal can be installed by using X4926 and a hammer to gently tap the seal into place.

6. Apply Loctite 243 to the threads of four stainless steel 5/16 UNC socket head cap screws (27).
7. Using the four stainless steel 5/16 UNC socket head cap screws (27), and four **new** stainless steel sealing washers (32); (**See note below**) install the inboard head (9) to the engine (5). The rubber sealing face of the sealing washers goes against the inboard head. Torque the 5/16 fasteners to 100 in-lb.

**Note:** The bottom two 5/16” NC hex head cap screws (12) used for attaching the pump casing (21) to the inboard head must be placed into location in the inboard head before installing the head to the engine (5).

8. Apply a light coating of marine grade grease to the entire engine shaft, except for the threaded portion. **DO NOT** put grease on the threaded portion of the shaft; the threads must be clean and dry.



9. Using a 1" socket on the hex of the impeller (18), and an impact wrench, install the impeller by turning it clockwise. A slight nudge with the impact wrench is all that is required to seat the impeller. Do not exceed 30 ft-lb of torque when installing the impeller. Loctite is not needed.
10. Apply a light coating of silicone grease to the new o-ring (19) and install it on inboard head (9).
11. Apply Loctite 243 to the threads of eight stainless steel 5/16" NC hex head cap screws (12). [**Note:** Two of these cap screws are the two that have already been put in the bottom of the inboard head (9) in step 7.]
12. Using the eight stainless steel 5/16" NC hex head cap screws (12), install the pump casing (21) onto the inboard head (9). Torque the 5/16" fasteners to 75 in-lb.
13. Reinstall the hand primer assembly (17), and tighten the two clamps [(3) Ref. Drawing DGC0214].
14. Reconnect hand primer hose [(11) Ref. Drawing DGC0214].
15. Apply Loctite 243 to the threads of the three thumbscrews (22) used to hold the recoil starter to the engine (5).
16. Using the three stainless steel thumbscrews (22) reinstall the recoil starter onto the engine (5).
17. Apply silicone grease to the porcelain of the sparkplug to prevent moisture from entering the sparkplug wire cap. Reconnect the sparkplug wire to the sparkplug.

## **Replacing the Discharge Check Valve**

### **Refer to Drawing DBC0502**

1. Remove three 3/8" NC socket head cap screws (26) and the discharge head (2) and check valve gasket (8).
2. Clean the flange surface of both the discharge head (2) and the pump casing (21). Remove any mineral deposits, sludge, etc. Inspect flanges for damage such as severe pitting, and nicks in sealing surface, that may not allow good sealing. Replace the pump casing and discharge head as needed.

### **REASSEMBLY**

3. Apply Loctite 243 to the threads of the three stainless steel 3/8" NC socket head cap screws (26).
4. Using the three 3/8" NC socket head cap screws, install the discharge head (2) to the pump casing (21), with the new discharge check valve gasket (8) sandwiched between the two flanged surfaces. Tighten the screws evenly to ensure uniform compression on the gasket and to avoid warpage of the sealing surfaces. Final torque for the 3/8" NC fasteners should be 140 in-lb.

**Note:** The smaller washer on the discharge check valve gasket faces the pump casing.

## **Replacing the Primer Cup**

### **Refer to Drawing DGC0214**

1. Loosen the socket set screw (15) that locks the primer cylinder head (10) from unscrewing. It is not necessary to remove the set screw all the way.
2. Unscrew the primer cylinder head (10).
3. Pull the primer piston rod (14) and piston cup (4) assembly out of the primer cylinder (5).
4. Remove the piston cup retaining nut (12), washer (17), and piston cup (4). Note the direction of the piston cup. If the cup gets reinstalled backwards, the primer will not work. This will be evident by difficulty pushing the piston cup into the cylinder during reassembly.
5. Clean the piston rod (14) threads with Loctite Klean "N" Prime or equivalent.
6. Install new piston cup (4) and piston retaining washer (17). The piston should cup towards the primer handle (9).

**Note:** If the cup gets reinstalled backwards, the primer will not work. This will be evident by extreme difficulty pushing the piston cup into the cylinder (5) in step # 10.

7. Apply Loctite 243 to the threads of the piston rod (14)
8. Install the stainless steel hex nut (12).

**Note: DO NOT** allow the Loctite to get on any other parts.

9. Apply a small amount of marine grade grease to the inside diameter of the primer cylinder (5). Also apply a light film of marine grade grease to the outside diameter of the piston cup (4). The grease is used to aid both in sealing the cup for higher vacuum, as well as lubrication for smoother operation.
10. Push the primer piston cup (4) assembly into the primer cylinder (5).
11. Screw the cylinder head (10) onto the cylinder (5) all the way, then back it off until the drain slot in the cylinder head is at the 4 o'clock position when installed on the pump unit.
12. Tighten the socket set screw (15) which locks the cylinder head (10) from unscrewing.

**IF FURTHER INFORMATION IS NEEDED, CALL W.S. DARLEY & CO. IN  
CHIPPEWA FALLS, WI. AT 800-634-7812 or 715-726-2650**

# W.S. Darley & Co.

## Spare Parts Kits for Darley 2BE6.5H Portable Pump

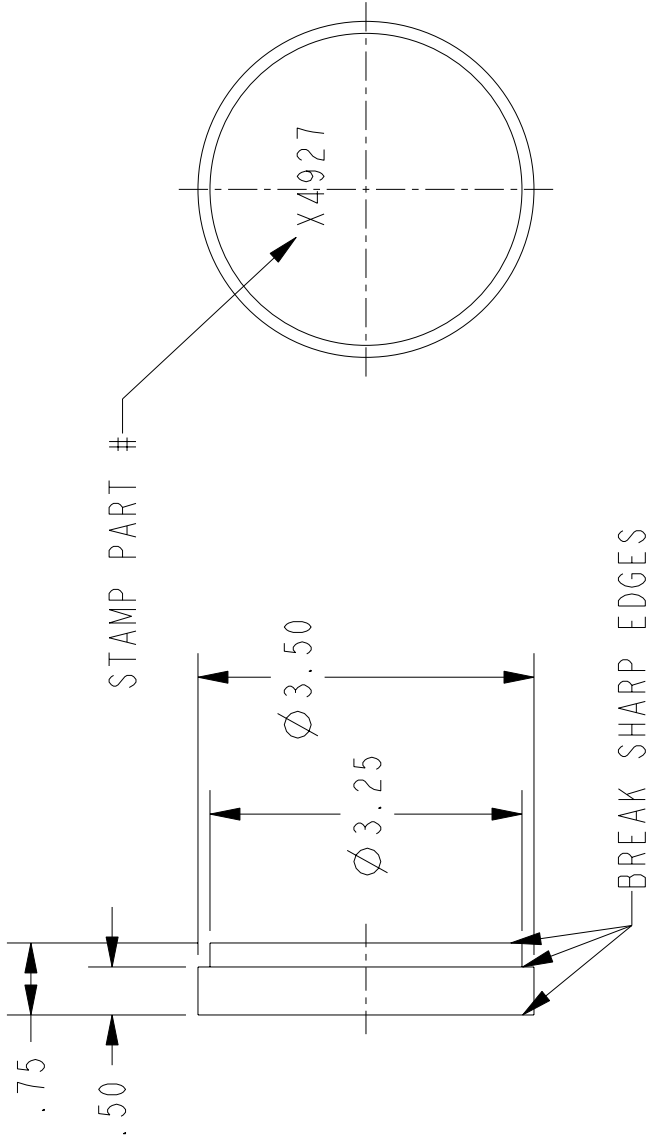
Description	Part Number	Qty per Kit
<b>Mechanical Seal Replacement Kit</b>	<b>KA00105</b>	
Seal, Furon Mechanical	1843400	1
Washer, Stainless Steel with Rubber Seal	3603915	4
Sleeve, Seal	1843300	1
O-ring	3601117	1
<b>2BE6.5H Hand Primer Repair Kit</b>	<b>KA00107</b>	
Check Valve	5201704	1
Bumper	4426300	1
Bumper	4426301	1
Piston Cup	4405700	1
<b>2BE6.5H Tool Kit</b>	<b>KC00711</b>	
Press Arbor	X4872	1
Bar, Seal Assembly	X4926	1
Plate, Seal Ring Assembly	X4927	1
<b>2BE6.5H Outfit Parts Kit</b>	<b>KC00707</b>	
Gasket, Discharge Check Valve Assy	3821301	2
Tank, Fuel Assembly Only	KE00109	1
Screw Assembly, Tee Knob	5402902	3
Primer Assembly	AP00314	1
Engine Fuel Filter	4207201	2
Fuel Fitting – Female	4403806	1
O’ring – Male Fuel Fitting	3601019	1
Fuel Fitting – Male	4403807	1
Fuel Tank Mounting Pads	4401721	6
Gasket for Suction & Discharge Hose Fittings	3807018	2
Spark Plug – NGK BPR6ES	4218800	1

Parts can be ordered from the W. S. Darley & Co. in Chippewa Falls, WI, by calling 800-634-7812 or 715-726-2650 and asking for customer service. For faster, more accurate service, please have your pump serial number ready.

Parts may also be purchased individually from W.S. Darley & Co.

NAME:TED		OBJECT:X4872		DATE:09-Feb-04 11:16:22													
REVISIONS		LTR		DESCRIPTION		DATE		CHG NO.		APPR'D							
REMOVE SHARP EDGES		INCH		MILLIMETER		THIRD ANGLE PROJECTION		OLD PART NO.		TOLERANCE EXCEPT AS NOTED		MODEL NAME		MDL CREATED		SHEET	
1.75 O.D. X 1.25 LG BRASS ROD		1.75		Ø 1.150 Ø 1.135		Ø 1.75		1.00		1.25		W.S. Darley & Co. MELROSE PARK, IL - CHIPPEWA FALLS, WI		X4872		1 / 1	
MATERIAL DESCRIPTION:		PATTERN NO.		MATERIAL NO.		DR 'N		TED		PRESS ARBOR FOR ASSEMBLING 1843300 TO 2907700		DATE 11-Feb-98		SCALE 1 / 1		X4872	
THIS DESIGN IS THE PROPERTY OF W.S. DARLEY AND CO. - UNAUTHORIZED REPRODUCTION IS PROHIBITED		DO NOT SCALE PRINT		ALL DIMENSIONS IN INCHES UNLESS NOTED		CHKD		TRCD		STAMP PART # ON THIS SURFACE							

REVISIONS			
LTR	DESCRIPTION	DATE	CHG NO. APPR'D



REMOVE SHARP EDGES

THIRD ANGLE PROJECTION  
INCH  
[MILLIMETER]

OLD PART NO.

TOLERANCE  
EXCEPT  
AS NOTED

W.S. Darley & Co.  
MELROSE PARK, IL - CHIPPEWA FALLS, WI

MATERIAL NO.  
1100020

PATTERN NO.

PLATE - SEAL RING ASSEMBLY  
2BE6.5H

THIS DESIGN IS THE PROPERTY OF  
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REPRODUCTION IS PROHIBITED

DO NOT SCALE PRINT

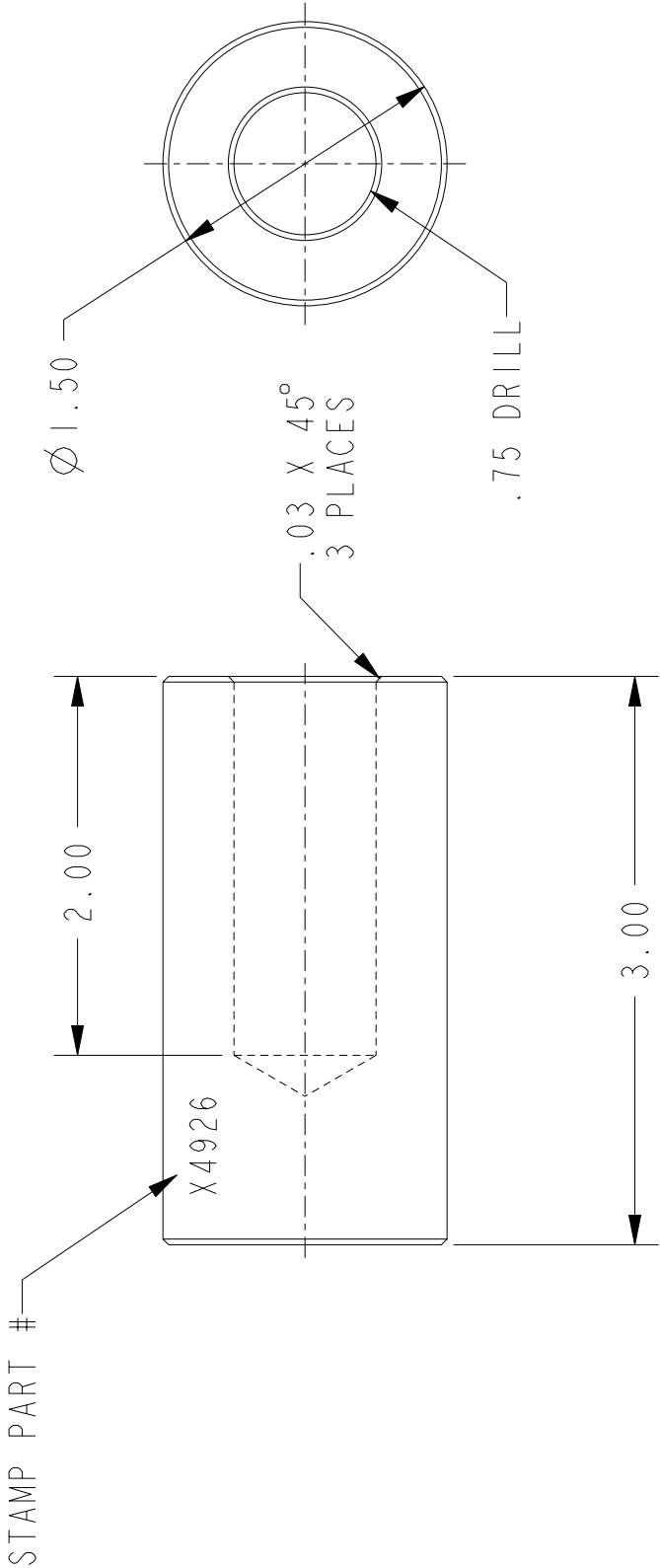
DR'N DWS  
CHKD  
TRCD

DATE 27-Feb-98  
SCALE 1/2

X4927

MODEL NAME MDL CREATED X4927 SHEET 1/1 A

REVISES			
LTR	DESCRIPTION	DATE	CHG NO. APPR'D



MODEL NAME		MDL CREATED		SHEET	
		X4926		1 / 1	
TOLERANCE EXCEPT AS NOTED		<b>W.S. Darley &amp; Co.</b> MELROSE PARK, IL - CHIPPEWA FALLS, WI			
.00 $\pm$ .03 .000 $\pm$ .010 ANGLES $\pm 1^\circ$		BAR - SEAL ASSEMBLY, 2BE6.5H			
DR'N	DWS	DATE 27-Feb-98		X4926	
CHKD		SCALE			
TRCD		1 / 1			

THIRD ANGLE PROJECTION		OLD PART NO.	
MATERIAL NO.		PATTERN NO.	
1100004			

INCH		MILLIMETER	
REMOVE SHARP EDGES			
MATERIAL DESCRIPTION:		ALL DIMENSIONS IN INCHES UNLESS NOTED	
1.50 OD X 3.12 12L14 CRS			
THIS DESIGN IS THE PROPERTY OF W.S. DARLEY AND CO. - UNAUTHORIZED REPRODUCTION IS PROHIBITED			

## Pump & Accessory Maintenance:

### 2BE6.5H PUMP AND ACCESSORY MAINTENANCE REQUIREMENTS

SYSTEM ID	ACTION	INTERVAL	MNT LVL	SPARES REQUIRED/DWG NO.	TOOLS/SE REQUIRED	PMS NUMBER
Pump Assembly (end)	Replace seal	Upon failure	Unit	Seal/Furon Mechanical, 1.12, p/n 1843400 (See dwgs. #DBC0503 & #1201004)	X4926 Seal Pressing tool 1.5" Diameter Metal Bar (about 6" to 8" long) Marine Grade Grease	
	Replace sleeve (seal)	Upon failure	Depot	Sleeve/Seal, p/n 1843300 (dwg. #DBC0503)	X4872 Seal Sleeve Press tool	
	Replace discharge check valve	Upon failure	Unit	Body - Discharge Check Valve, p/n 2056000 (See dwg. #DBC0502)	Loctite 243 or equivalent Wrench for 3/8" head	
	Replace discharge check valve assembly	Upon failure	Depot	Gasket - Disch Ch Valve Assy, p/n 3821301 (See dwg. #DBC0502)	5/16" Allen Wrench Allen socket	
	Replace impeller	Upon failure	Depot	Impeller, p/n 2907700 (See dwg. #DBC0502)	1/2" Wrench 1/2" Socket 1" Socket	
Priming System	Replace inboard head	Upon failure	Unit	Head, inboard, 2BE6.5H, p/n 2810001 (See dwg. #DBC0503)	1/2" wrench, 1/2" flex socket, 5/16" Allen Wrench, Allen socket	
	Check hand priming pump/ replace assembly upon failure	Yearly	Unit	Primer Assembly, p/n AP00314 (See dwg. #DGC0214)	3/32" Allen Wrench	
	Replace pump	Upon failure	Depot	(See dwg. #DBC0502)	7/16" deep socket	
	Replace check valve	Upon failure	Unit	Check valve, primer, p/n 5201704 (See dwg. #DGC0214 for all below)	5/8" wrench	
	2BE6.5H hand primer kit: - Replace primer cup - Replace bumper(s)	Upon failure Upon failure	Unit Unit	Piston Cup, p/n 4405700 Bumper, p/n 4426300 & Bumper, 4426301	1/2" wrench	
	Replace hand primer hose	Upon failure	Unit	Hose, hand primer, p/n 4402392		
	Replace 3/8 NPT 90 deg. elbow	Upon failure	Depot	3/8 elbow, p/n 3502011		
	Replace cup washer	Upon failure	Depot	Cup washer, p/n 3603716		
	Replace cylinder	Upon failure	Depot	Cylinder, p/n 1020602		
	Replace cylinder head	Upon failure	Depot	Cylinder head, p/n 2802502		
	Replace 1/4 NPT 90 deg. elbow	Upon failure	Depot	1/4 elbow, p/n 3502010		
	Replace end cap	Upon failure	Depot	End cap, p/n 2501803		
	Replace handle	Upon failure	Depot	Handle, p/n 3001002		
	Replace hex nut	Upon failure	Depot	Hex nut, p/n 5403207		
	Replace piston nut	Upon failure	Depot	Piston nut, p/n 5403467		
	Replace piston rod	Upon failure	Depot	Piston rod, p/n 1041001		
	Replace soc head cap screw	Upon failure	Depot	Soc head cap screw, p/n 5402627		

# **PUMP AND ACCESSORY MAINTENANCE REQUIREMENTS, continued**

SYSTEM ID	ACTION	INTERVAL	MNT LVL	SPARES REQUIRED/DWG NO.	TOOLS/SE REQUIRED	PMS NUMBER
Accessories	Replace suction hose assembly	Upon failure	Depot	Suction Hose, p/n 4402389		
	Replace suction hose gasket	Upon failure	Unit	Suction hose gasket, p/n 3807018		
	Replace discharge hose assy	Upon failure	Depot	Discharge hose, p/n 4402391		
	Replace discharge head gasket	Upon failure	Unit	Gasket, Disch Valve Assy, p/n 3821301		
<i>Fuel System Accessories:</i>	Replace quick disconnect fittings	Upon failure	Unit	Fitting, Quick Disconn, Male, p/n 4403807 Fitting, Quick Disconn, Female, p/n 4403806	Pliers	
	Replace discharge hose gasket	Upon failure	Unit	Discharge hose gasket, p/n 3807018		
<i>Stowage Container and Accessories:</i>	Replace stowage container	Upon failure	Unit	USCG p/n NSN 8110-01-031-8863		
	Replace gasket	Upon failure	Unit	USCG p/n NSN 5330-00-062-7420		
	Replace locking ring	Upon failure	Unit	USCG p/n NSN 5340-01-144-7003		
	Replace other accessories (flashlight, instruction card & starting rope)	Upon failure	Depot	Flashlight, p/n 4427200 Instruction card, p/n 1200571 Starting rope, p/n 4218000		



## Engine Maintenance:

### HONDA GX200 ENGINE MAINTENANCE REQUIREMENTS

SYSTEM ID	ACTION	INTERVAL	MNT LVL	SPARES REQUIRED/DWG NO.	TOOLS/SE REQUIRED	PMS NUMBER
Engine/Fuel System	Inspect fuel tank	Upon receipt, and each time unit is operated	Unit	Fuel tank, p/n 4217707		
	Replace fuel tank assembly	Upon failure	Unit	Tank, Fuel, Assembly, p/n KE00109 (See dwg. #DGM1108)		
	Replace fuel tank	Upon failure	Unit	Tank, Fuel, 2.5 gal. plastic, p/n 4217707 (See dwg. #DGM1108)		
	Replace fuel tank mount bracket	Upon failure	Depot	Bracket, fuel tank mount, p/n 4025803 (See dwg. # DGM1108)	7/16" Open end wrench ½" Open end wrench	
	Replace poly tie down	Upon failure	Unit	Tie down, poly, p/n 4427100 (See dwg. # DGM1108)		
	Replace fuel cap	Upon failure	Unit	Cap, Fuel Tank, p/n 4217718		
	Replace fuel gage	Upon failure	Unit	p/n 4217713		
	Check oil level	Prior to each use	Unit	4 stroke SAE 10W-30 detergent oil (.63 U.S. qts.)		
	Change oil	First 20 hrs and 100 hrs/6 mos thereafter	Unit	4 stroke SAE 10W-30 detergent oil (.63 U.S. qts.)	10mm Socket	
	Check air filter	After every use.	Unit	n/a		
	Replace air filter	Every 300 hrs of ops	Unit	Air filter, Honda p/n 17210-ZE1-505		
	Replace fuel filter	Every 300 hrs. of ops	Unit	Fuel filter, Honda p/n 16910-ZE8-015 Fuel Filter, Darley p/n 4207201		
	Check fuel line	Quarterly	Unit	n/a		
	Replace fuel line	Upon failure	Unit	Hose, .25 x 1.75 fuel, p/n 4402325 (See dwg. #DGM1109)	Pliers	
	Check high speed adjustment	Yearly	Unit	n/a	Hand Tachometer	
	Clean sediment cup	Every 100 hrs., or 6 mos., or during every oil change	Unit	n/a	10mm Socket High flash-point solvent	
	Clean fuel tank	Yearly or every 300 hrs.	Unit	n/a		
	Check spark plug	Every 100 hrs. or 6 mos.	Unit	n/a	13/16" Deep socket	
	Replace plug	Upon failure	Unit	NGK #BPR6ES or equivalent	13/16" Deep socket	
	Check/readjust valve clearance	Every 300 hrs. or 1 yr.	Unit	n/a		
	Clean carburetor	As necessary	Unit	n/a	10mm Socket High flash-point solvent Silicone grease, High flash point solvent, paint, etc.	
	Remove corrosion	As needed	Unit	n/a		

## TROUBLESHOOTING:

PROBLEM	CAUSES	SUGGESTED CORRECTION
PUMP FAILS TO PRIME OR LOSES PRIME	AIR LEAKS	CLEAN AND TIGHTEN ALL SUCTION CONNECTIONS. CHECK CONDITION OF HOSES AND HOSE GASKETS. RUN DRY VACUUM TEST AS FOLLOWS: A) CONNECT SUCTION HOSE TO PUMP AND CAP END. B) DRAIN PUMP. C) OPERATE PRIMER AND DRAW A VACUUM, PREFER 20-22". D) IF VACUUM DROPS MORE THAN 10" HG. IN 10 MINUTES, EXCESSIVE LEAKAGE IS PRESENT. WITH ENGINE SHUT OFF, AIR LEAKS ARE SOMETIMES AUDIBLE.
	DISCHARGE CHECK VALVE LEAKS.	REMOVE DISCHARGE CHECK VALVES AND REPAIR OR REPLACE. CLEAN SEALING FACE OF PUMP CASING FLANGE
PUMP FAILS TO PRIME OR LOSES PRIME CONTINUOUSLY.	SUCTION WHIRLPOOL.	PUMPING LARGE VOLUMES WITH SUCTION HOSE TOO SHALLOW IN WATER SUPPLY CAN CAUSE WHIRLPOOLS, ALLOWING AIR TO BE DRAWN INTO THE PUMP, LOSING PRIME. PLACE SUCTION HOSE DEEPER, OR LESSEN VOLUME BEING PUMPED.
	HIGH POINT IN SUCTION LINE.	LAY A FLAT OBJECT, SUCH AS THE KIT CONTAINER COVER OVER THE TOP OF THE SUCTION SCREEN WHEN PUMPING IN SHALLOW WATER.
CAPACITY OF PUMP LOW.	TOO HIGH OF A SUCTION LIFT.	LOWER SUCTION HOSE BELOW PUMP SUCTION, IF NOT POSSIBLE, REPRIMING SEVERAL TIMES MAY BE NECESSARY TO REMOVE AIR LOCK. SOMETIMES TOO HIGH OF A LIFT IS NOT OBTAINABLE. TRY TO KEEP THE LIFT AS LOW AS POSSIBLE.
	SUCTION HOSE TOO SMALL. DEFECTIVE SUCTION HOSE.	USE THE PROPER SIZE SUCTION HOSE FOR THE RATING OF THE PUMP. SUCTION HOSE LINER MAY BE COLLAPSING, RESTRICTING FLOW TO PUMP. TRY DRAFTING WITH A DIFFERENT SUCTION HOSE.
PRESSURE OUTPUT OF PUMP IS LOW.	SUCTION HOSE MAY BE PUNCTURED, OR DAMAGED. TRY DRAFTING WITH A DIFFERENT SUCTION HOSE.	
	PLUGGED SUCTION SCREEN. WORN IMPELLERS AND SEAL RINGS.	CLEAN DEBRIS OUT OF SCREEN. REPLACE WORN IMPELLERS AND SEAL RINGS TO MEET W. S. DARLEY SPECIFICATIONS.
WATER LEAKING BETWEEN THE PUMP AND THE ENGINE.	ABOVE CAUSES OF LOW CAPACITY. TOO MUCH CAPACITY.	CHECK ALL OF THE ABOVE CAUSES OF LOW CAPACITY AS THEY CAN ALSO AFFECT PUMP PRESSURE. CAPACITY AND PRESSURE ARE DIRECTLY PROPORTIONAL. IF TRYING TO PUMP A LARGE CAPACITY, PRESSURE WILL BE LIMITED. ALSO INCREASING PUMP PRESSURE DOES NOT MEAN A VOLUME INCREASE IN WATER PUMPED.
	SHAFT SEAL DAMAGED	RUNNING A PUMP DRY (WITHOUT WATER) FOR LONG PERIODS OF TIME CAN DAMAGE A SHAFT SEAL. AVOID RUNNING A PUMP WITHOUT WATER. REPLACE SHAFT SEAL.
ENGINE WILL NOT START	FUEL VALVE IS OFF	MOVE FUEL VALVE LEVER TO THE ON POSITION.
	IGNITION SWITCH IS OFF	TURN ENGINE IGNITION SWITCH ON

PROBLEM	CAUSES	SUGGESTED CORRECTION
ENGINE WILL NOT START (CONTINUED)	CHOKE IS OFF	IF THE ENGINE IS COLD, THE CHOKE MAY BE NEEDED TO BE USED TO START THE ENGINE.
	OUT OF FUEL	SWITCH TO A FULL FUEL TANK OF GASOLINE OF 86 OCTANE OR HIGHER
	BAD GASOLINE	DRAIN AND CLEAN CARBURETOR FLOAT BOWL AND SEDIMENT CUP, AND REPLACE FUEL WITH GOOD GASOLINE OF 86 OCTANE OF HIGHER.
	FUEL FILTER IS PLUGGED	REPLACE FUEL FILTER, CLEAN CARBURETOR SEDIMENT CUP, AND CLEAN FUEL TANK TO AVOID PLUGGING FILTER AGAIN.
	SPARK PLUG FAULTY, FOULED, OR IMPROPERLY GAPPED	CLEAN OR REPLACE SPARK PLUG, AND ADJUST GAP
ENGINE LACKS POWER	SPARK PLUG WET WITH GAS (ENGINE FLOODED)	DRY AND REINSTALL SPARKPLUG. START WITH THROTTLE LEVER IN FAST OR FULL OPEN POSITION.
	AIR FILTER CLOGGED	CLEAN OR REPLACE AIR FILTER.
	BAD FUEL	USE FRESH FUEL