DAHL®

BALDWIN

RECYCLER, RECYCLER/BLENDER & FUEL TRANSFER MODELS

- Installation
- Operation
- Parts
- Service Information

RECYCLER, RECYCLER/BLENDER & FUEL TRANSFER

DAHL Recycler Units efficiently separate water and solid contaminants to maintain stability and purity of stored diesel fuel.

DAHL Recycler/Blender Units are dual function. In addition to recycling, these units blend used diesel engine crankcase oil with diesel fuel. Diesel fuel blended with up to 5% used crankcase oil has been tested and approved by major diesel engine manufacturers.

Fuel Transfer can be accomplished by either of the above. As the fuel is being transferred from one tank to another, the DAHL unit separates the water and filters out solid contaminants.

Caution: Do not use with an oxidation catalyst, often referred to as a catalytic converter.

Blended fuel used in motor vehicles in on-highway applications must not exceed the maximum sulfur content allowed by United States federal law. To be sure that blended fuel complies with the law, both the diesel fuel and lubricating oil must have their sulfur content measured by a qualified laboratory using the testing method specified in ASTM D2622 (American Society of Testing and Materials Standard) or ISO 4260.

MODELS 200 & 300 SPECIFICATIONS

SPECIFICATIONS	200 SINGLE	300 SINGLE	300 DOUBLE
Flow Rate (Recommended)	120 GPH (U.S.) 454 LPH	180 GPH (U.S.) 681 LPH	300 GPH (U.S.) 1136 LPH
Height (w/o Cart) (w/Cart)	16 3/4 in. (425.5 mm)	22 1/4 in. (565.2 mm) 46 in. (1168 mm)	22 1/4 in. (565.2 mm) 46 in. (1168 mm)
Width of Stationary Units	22 1/2 in. (572 mm)	24 1/2 in. (622 mm)	
Width of Portable Units		22 in. (559 mm)	26 in. (660 mm)
Depth of Stationary Units	9 1/2 in. (241 mm)	9 1/2 in. (241 mm)	
Depth of Portable Units		21 in. (522 mm)	25 in. (635 mm)
Dry Weight, Stationary Units	61 lbs. (28 kg)	65 lbs. (29 kg)	
Dry Weight, Portable Units		98 lbs. (44 kg)	125 lbs. (57 kg)
Port Size — Inlet Outlet	7/8-14 1/2 in. NPT	7/8-14 1/2 in. NPT	1/2 in. NPT 3/4 in. NPT
Sump Water Capacity	24 ounces	24 ounces	48 ounces
Filter Elements	201-W	301-W	301-W

PORTABLE UNITS

Portable units are mounted on a sturdy 46 inch high cart. Easy-rolling 10 inch wheels with rubber tires make it simple to wheel these units to the equipment rather than bring the equipment to the unit. (Cart is 21 inches wide)

110 Volt AC is standard, but 220 Volt AC is also available. Maximum flow rate for single motorized units is 180 GPH (U.S.), 300 GPH (U.S.) for double units.

The motorized pump includes an on/off switch and 7 1/2 feet of heavy-duty 16/3 cable with ground.

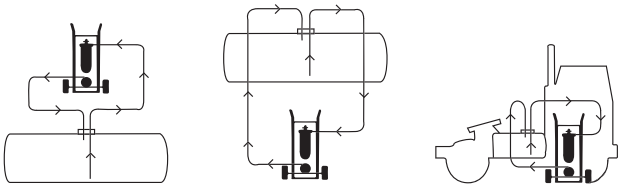
Units come with 15 foot lengths of number 10 or number 12 fuel hoses. Number 10 fuel hoses come with 1/2" NPT male threaded fittings and number 12 fuel hoses come with 3/4" NPT male threaded fittings.

PIPE EXTENSION NOTE: For best suction control, a half-inch by ten foot section of pipe can be attached to the end of the suction hose. Notch the suction end of the pipe for good flow. If possible, periodically move the location at the bottom of the tank.

⚠ **CAUTION:** When blending with the fuel supply tank above the used oil supply tank, close the oil and fuel inlet valves any time the unit is temporarily shut down. This will prevent any possibility of fuel siphoning into the oil tank.

RECYCLING APPLICATIONS WITH DAHL PORTABLE UNITS

Figure 1



Below Ground Tank | Above Ground Tank | Equipment Fuel Tank

RECYCLERS:
(Standard Unit Has 10 Micron Element)

300-DR 110 Volt Recycler on Cart with EM-03D11 3 GPM Pump & Motor

300-DR220 OBS 220 Volt Recycler on Cart with EM-03D11 3 GPM Pump & Motor

300-DR W/O OBS Recycler on Cart without Pump & Motor

300-DR5 110 Volt Double Recycler on Cart with 5 GPM Pump & Motor

300-DR5220 OBS 220 Volt Double Recycler on Cart with 5 GPM Pump & Motor

300-DR5 W/O OBS Double Recycler on Cart without Pump & Motor

300-DRA 110 Volt Recycler on Cart with EM-03D11 3 GPM Pump & Motor and EA-002 Automatic Shut-Off — Water Sensor Probe activates shut-off.

RECYCLER/BLENDERS:

300-DB OBS 110 Volt Recycler/Blender on Cart with EM-03D11 3 GPM Pump & Motor

300-DB W/O OBS Recycler/Blender on Cart without Pump & Motor

300-DB5 110 Volt Double Recycler/Blender on Cart with 5 GPM Pump & Motor

300-DB5220 220 Volt Double Recycler/Blender on Cart with 5 GPM Pump & Motor

300-DB5 W/O OBS Double Recycler/Blender on Cart without Pump & Motor

300-DBA 110 Volt Recycler/Blender on Cart with EM-03D11 3 GPM Pump & Motor and EA-002 Automatic Shut-Off — Water Sensor Probe activates shut-off.

300-DBA5 OBS 110 Volt Double Recycler/Blender on Cart with 5 GPM Pump & Motor and EA-002 Automatic Shut-Off — Water Sensor Probe activates shut-off.

300-DBA220 220 Volt Recycler/Blender on Cart with EM-03D11 3 GPM Pump & Motor and EA-002 Automatic Shut-Off — Water Sensor Probe activates shut-off.

STATIONARY UNITS

Stationary units should be located close to the fuel tank. Mount vertically on a stable location, protected from harsh environments. Allow at least 3 to 4 inches of clearance below the filter bowl for servicing.

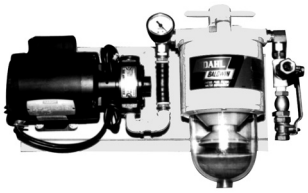
Piping Requirements

Each installation is different. Planning the piping installation may require investigation. If necessary, consult the construction company who installed the fuel storage tank for the existing pipe layout.

The fuel return line should be located at the top of the fuel tank.

Important

Always install fuel lines in accordance with local regulations.



200-SR Recycler

300-SB Recycler/Blender

STATIONARY UNITS:

200-SR 110 Volt Stationary Recycler with EM-03D11 3 GPM Pump & Motor.

300-SR 110 Volt Stationary Recycler with EM-03D11 3 GPM Pump & Motor.

300-SB 110 Volt Recycler/Blender with EM-03D11 3 GPM Pump & Motor.

300-SBBP OBS 110 Volt Recycler/Blender with Water Sensor Bowl Probes and EM-03D11 3 GPM Pump & Motor.

300-SB22 OBS 220 Volt Recycler/Blender with EM-03D22 3 GPM Pump & Motor.

300-SB5 OBS 110 Volt Double Stationary Recycler/Blender with EM-05D11 5 GPM Pump & Motor.

300-SB12V OBS 12V DC Stationary Recycler/Blender with 3 GPM Pump & 12 Volt Motor

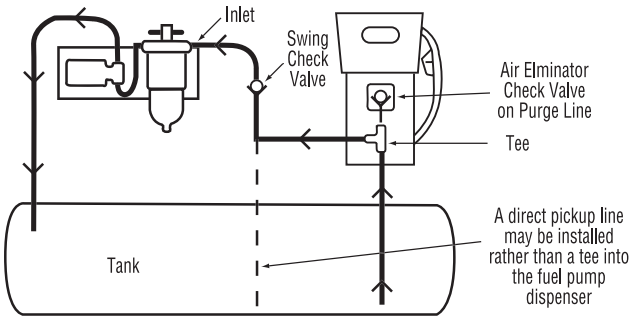
500-SBBP W/O OBS 1800 GPH (U.S.) Recycler/Blender with Water Sensor Probes without Pump & Motor.

A. Below Ground Fuel Tank Application

Recommendations

1. No more than ten vertical feet of suction lift with one-inch line is recommended.
2. For fuel pump dispenser units with an air elimination system, install a check valve on the air purge line as shown in Figure 2. This prevents the DAHL unit from drawing air through the purge line, which will prevent proper operation.
3. Install a swing-type check valve prior to the DAHL filter inlet to allow proper operation of the fuel pump dispenser.

Figure 2



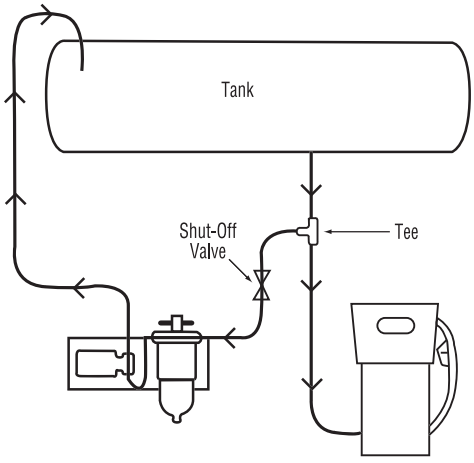
Stationary Recycler or Recycler/Blender Unit

B. Above Ground Fuel Tank Application

Recommendations

1. The vertical distance from the DAHL filter inlet to the maximum fuel level in the storage tank should never exceed 35 feet.
2. The DAHL filter outlet gauge may indicate pressure in a static condition. Never exceed 15 PSI. With a full fuel tank, record the initial pressure reading before starting the pump.
3. Install a ball- or butterfly-type shut-off valve prior to the DAHL filter inlet to contain fuel during maintenance procedures. (Not required on recycler/blender models)

Figure 3



Stationary Recycler or Recycler/Blender Unit

OPERATION — RECYCLING (ALL MODELS)

NOTE: On Recycler/Blender Models
- a. Be sure the pump by-pass valve is closed.
- b. Be sure the fuel inlet valve is open and the oil inlet valve is closed.
- c. Place the fuel inlet hose at the lowest point in the tank.
- d. Place the fuel outlet hose at the top of the tank for fuel return.

1. **Priming**
   - a. Loosen the T-Bolt handle to release the filter body from the lid. Support the filter body with your hand prior to release.
   - b. Fill the filter body to within one-inch of the top with clean diesel fuel.
   - c. Lubricate the lid cover gasket and replace.
   - d. Reinstall the body to the lid. Hand tighten only.
2. Turn unit on. The toggle switch is on the motor. All DAHL units operate continuously and must NEVER be left running dry (No fluid flow through the pump).

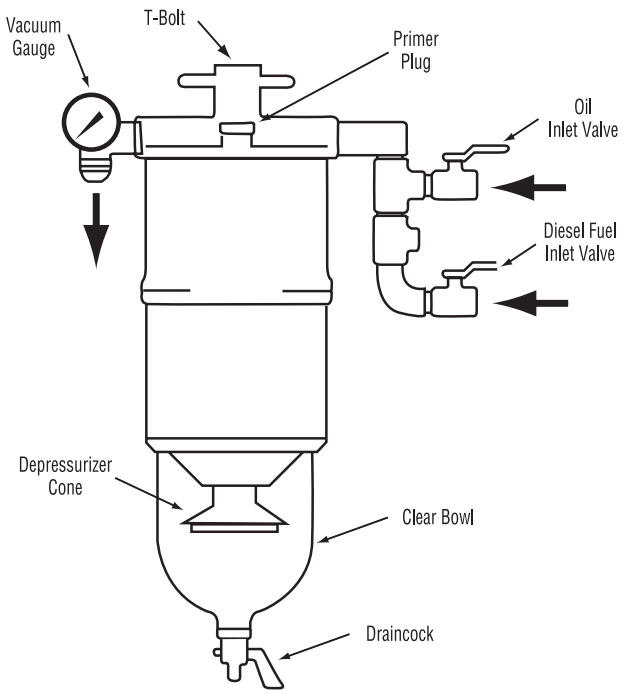
NOTE: On Recycler/Blender Models adjust the DAHL pump by-pass valve to the desired flow. Opening the valve decreases the flow. See Figure 4.

3. Recycling time is determined by the fuel quality or until no additional contaminants appear in the bowl. Recycling time (in hours or minutes) may be estimated with the use of Table 1.
4. Monitor the bowl for water and contaminants. Drain as needed.

NOTE: Water must be drained before the level reaches the depressurizer cone. Refer to DRAINING WATER section. An optional water sensor with automatic pump shut-off is a handy accessory.

5. Element condition is monitored by the vacuum gauge located on the DAHL filter outlet. Refer to ELEMENT REPLACEMENT section.

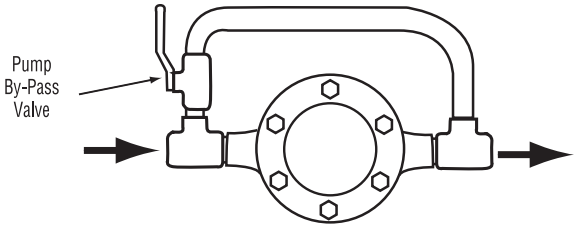
Figure 4

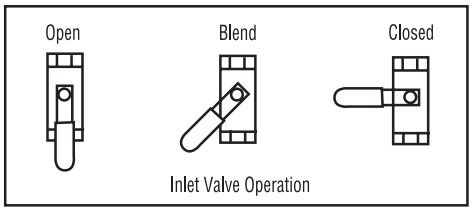


Recyclers Flow Rates — **Table 1**

DAHL Model Series	Gallons Per Hour*	Recycle Time	
		IN MINUTES Divide Gallons of Fuel by	IN HOURS Divide Gallons of Fuel by
200-SR	120	2	120
300 Single Series	180	3	180
300 Double Series	300	5	300

* Maximum Pump Rating - Actual flow may be less.





OPERATION — FUEL TRANSFER (ALL MODELS)

All DAHL recycler units may be used to transfer fuel from one tank to another. The DAHL pump provides fluid movement while the DAHL diesel fuel filter/water separator removes water and solid contaminants. Calculate transfer time by using Table 1.

1. Flip toggle switch on motor to on.

NOTE: On Recycler/Blender Models adjust the DAHL pump by-pass valve to desired flow. Opening the valve decreases the flow. See Figure 4.

2. Monitor the bowl for water and solid contaminant build-up. Drain as needed. Never let water reach the depressurizer cone. Refer to DRAINING WATER section. An optional water-activated shut-off assembly can be used for monitoring this operation, but servicing is still required.

OPERATION — BLENDING (BLENDER MODELS)

The blending function may be started at any time while recycling. Use only crankcase oil from diesel equipment. The crankcase oil can come from the engine oil pan, drain pan or waste oil barrel. The oil/diesel fuel blend may be returned to any fuel storage tank for use.

NOTE: Quick disconnect oil pan couplers are ideal for fleet servicing. (Available from most parts dealers.)

A. Cautions

1. Crankcase oil from gasoline engines should never be used for blending because additives could cause problems.
2. The maximum ratio for blending oil to diesel fuel is 5% by volume. To say it another way, one part of used oil to twenty parts of diesel fuel. NEVER EXCEED THIS RATIO OF 1:20.

NOTE: When blending with the fuel supply tank above the used oil supply tank, close the oil and fuel inlet valves any time the unit is temporarily shut down. This will prevent any possibility of fuel siphoning into the oil tank.

B. Calculations

1. If the quantity of used oil is known, multiply by 20 to find the minimum quantity of fuel to blend with the oil.
2. If the quantity of diesel fuel is known, divide by 20 to find the maximum quantity of crankcase oil to blend into the fuel.

DOUBLE CHECK YOUR CALCULATIONS FOR ACCURACY

NOTE: Cold oil has high viscosity, is difficult to mix and shortens the filter element life. Whenever possible, use warm oil for blending or first dilute the oil with diesel fuel. (This will not alter your initial blend calculation.)

C. To Start Blending Operation

1. See Figure 4 on Page 4. Be sure DAHL valves are in proper positions:
   a. DAHL pump by-pass valve — Closed.
   b. DAHL diesel fuel inlet valve — Open.
   c. DAHL oil inlet valve — Open.

NOTE: Position of the oil inlet valve depends on the oil temperature.
   a. Oil 60°F (16°C) or warmer mixes best. Set the oil inlet valve at the BLEND position.
   b. Colder oil may require a more open position of the oil inlet valve or even a partial closing of the diesel fuel inlet valve.

2. **Priming**
   a. Loosen the T-Bolt handle to release the filter body from the lid. Support the filter body with your hand prior to release.
   b. Fill the filter body to within one-inch of the top with clean diesel fuel.
   c. Lubricate the lid cover gasket and replace.
   d. Reinstall the body to the lid. Hand tighten only.
3. Turn unit on. The toggle switch is on the motor. All DAHL units operate continuously and must NEVER be left running dry (No fluid flow through the pump).

NOTE: If the vacuum gauge reading exceeds 20 inches of mercury, do not operate the unit. Refer to CLOGGING AND RESTRICTION section.

4. Blending time continues until the calculated quantities are blended together and may be estimated according to Table 2.

Blender Flow Rates — Table 2

DAHL Blender Series	Gallons Per Hour*	Blend Time Per Gallon of Waste Oil
300 Single Series	180	Approximately 7 Minutes
300 Double Series	300	Approximately 4 Minutes

* Maximum Pump Rating - Actual flow may be less.

NOTE: a. To achieve an efficient mixture and prolong the filter element life, the oil may be injected slower and the unit operated for a longer period of time.

b. Water must be drained before the level reaches the depressurizer cone. Optional water-activated shut-off assembly will stop the pump until the unit is serviced. Without this option, check water level frequently. Refer to DRAINING WATER section.

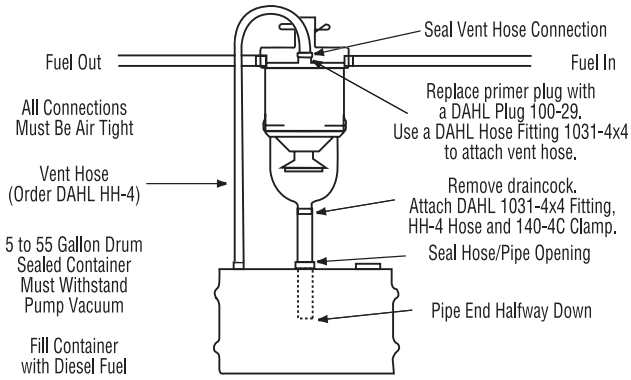
OPERATION — NON-POWERED CONTAMINANT EXTRACTION (ALL MODELS)

Figure 5 suggests the use of a container below the DAHL diesel fuel filter/water separator to provide storage of large quantities of extracted water and/or solids from the diesel fuel. This installation is especially useful in stationary applications, such as unattended power generators, where frequent monitoring of contaminants is impossible.

During operation, separated contaminants will fall to the bowl sump and continue downward to the container below. The diesel fuel, which is displaced by these contaminants, returns to the fuel system via the vent hose.

Service the container when it is half full of water and contaminants or when water appears in the bowl.

Figure 5



SERVICING

DRAINING WATER

NOTE: The bowl must be drained before water or contaminant levels reach the bottom of the depressurizer cone.

A. Turn unit off.

NOTE: On units with optional automatic water-activated shut-off, the motor will shut off automatically when the water level reaches the water sensor bowl probes. Drain contaminants and press the reset button to resume operation. (An override switch is provided in the event it is necessary to maintain pump operation. Drain water as soon as possible.)

B. Drain contaminants using one of the methods below:

1. **On Underground Fuel Storage Tank Applications**
   Open the primer plug at the top and the draincock at the bottom of the DAHL unit. Allow to drain, then close the draincock. Fill the filter with clean fuel and close the primer plug.
2. **On Above Ground Fuel Storage Tank Applications**
   Open the draincock until the water has drained out, then close it. (The head pressure from the tank primes the DAHL unit automatically.)

C. Start pump and check for leaks.

ELEMENT REPLACEMENT

A. When To Replace

Check the vacuum gauge on the DAHL outlet to determine the element condition. Replace the element at 20 inches of mercury vacuum. Do Not Exceed.

NOTE: On Above Ground Fuel Tank Applications, the vacuum reading may not be indicated until well into the service life of the element. This is caused by the variable head pressures which are exerted on the unit based on the tank location.

B. How To Replace Contaminated Element

1. Shut the DAHL pump motor off. (Toggle switch is on the motor.)
   a. **On Underground Fuel Storage Tank Applications**
   Open the primer plug and then the draincock to drain the entire contents of the DAHL unit.
   b. **On Above Ground Fuel Storage Tank Applications**
   Close the tank shut-off valve. (See Figure 3 on Page 3.) Open the primer plug and then the draincock to drain the entire contents of the DAHL unit.
3. Loosen the T-Bolt handle to release the filter body from the lid. (It is not necessary to completely remove the T-Bolt from the DAHL filter lids.) Support the filter body with your hand prior to release.
4. Remove the element with a turning motion. At this point, you may clean the outside of the filter body. Use only clean diesel fuel or kerosene and wipe clean.
5. Inspect the ejector spring(s) at the bottom of the body. Also check the centerpipe O-Ring and replace if hard or damaged.
6. Remove and replace the lid cover gasket. Be sure the lid groove and body lip are clean. (Grease the lid cover gasket before positioning.)

C. Reassembly

1. Lubricate the top and bottom element gaskets. Install the element onto the centerpipe with a turning motion.
2. a. Fill the filter body with clean diesel fuel to within one inch of the top.
   b. **On Above Ground Fuel Storage Tank Applications**
   Open the primer plug slightly and then open the tank shut-off valve. (See Figure 3 on Page 3.) Head pressure from the tank will force fill the unit while purging the air. When the diesel fuel appears at the primer plug, hand tighten the plug promptly.
3. Double check the lid cover gasket position in the lid groove.
4. Attach the body to the lid and hand tighten the T-Bolt handle.
5. Start the pump and check for leaks.

PROBE CLEANING

A. When To Clean Probes

Asphaltines (fuel oxidation products) present in diesel fuel coat the metal probes with an invisible film which can prevent them from working. For dependable service, if used frequently, clean the probes monthly.

B. How To Clean Probes

1. Unplug the unit and remove the probe wires at the probes.
2. a. **On Underground Fuel Storage Tank Applications**
   Open the primer plug at the top and the draincock at the bottom of the DAHL unit. Allow to drain, then close the draincock.
   b. **On Above Ground Fuel Storage Tank Applications**
   Close the tank shut-off valve. (See Figure 3 on Page 3.) Open the draincock until the water drains out, then close it. (The head pressure from the tank primes the DAHL unit automatically.)
3. Loosen the T-Bolt handle to release the filter body from the lid. (It is not necessary to completely remove the T-Bolt from the DAHL filter lids.) Support the filter body with your hand prior to release.
4. Remove the element with a turning motion. At this point, you may clean the outside of the filter body. Use only clean diesel fuel or kerosene and wipe clean.
5. Remove the socket head bolts from the bowl ring to release the bowl. Stubborn bolts are easily removed by "shocking" the head. Place the allen wrench into the bolt and lightly rap the wrench with a hammer. Remove the bolt.
6. Check all parts for damage. Replace all damaged parts or hard gaskets. (Order Gasket Kit 200-GK.)
7. Refer to the parts illustration for reassembly. Clean all gasket grooves and contact surfaces of foreign matter. Coat the lid cover gasket with grease and all other gaskets and O-Rings with diesel fuel. Hand tighten the depressurizer cone and wrench tighten the socket head bolts.
8. Wipe the probe tips clean on the inside and outside of the bowl with a clean dry cloth.

C. Reassembly

1. Lubricate the top and bottom element gaskets. Install the element onto the centerpipe with a turning motion.
2. a. Fill the filter body with clean diesel fuel to within one inch of the top.
   b. **On Above Ground Fuel Storage Tank Applications**
   Open the primer plug slightly and then open the tank shut-off valve. (See Figure 3 on Page 3.) Head pressure from the tank will force fill the unit while purging the air. When the diesel fuel appears at the primer plug, hand tighten the plug promptly.
3. Double check the lid cover gasket position in the lid groove.
4. Attach the body to the lid and hand tighten the T-Bolt handle.
5. Start the pump and check for leaks.
6. Reattach the probe wires.

WARNING: DO NOT use gasoline or any form of alcohol or anything containing it inside or outside a DAHL unit.

DAHL HYDRAULIC RECYCLERS

DAHL Hydraulic Recycler units are designed specifically for removal of water from hydraulic oils. Due to the composition of hydraulic oils, water becomes emulsified and cannot be removed from the hydraulic oil by conventional methods. The DAHL Hydraulic Recyclers use a special cartridge constructed from filtering media that absorbs the water. Hydraulic oils that contain relatively large amounts of water may require several passes through the filter to remove the water. Since the cartridge captures the water, the cartridge becomes more restrictive as it absorbs water. To prevent undue wear on the pump and motor, a vacuum switch is provided to shut the motor off when the pump produces a predetermined suction.

The Hydraulic Recycler is available in two portable arrangements and as an in-line filter. The portable units both consist of two units, a pump, a motor, a control box and a vacuum switch. The "Series Flow" model, **300-DHRAS5**, has the double unit arranged so that the hydraulic oil passes through the water-absorbing cartridge and then through a synthetic media to achieve high capacity and fine filtering.

The "Parallel Flow" model, **300-DHRAP5**, uses two water-absorbing cartridges with the oil flow split between the two cartridges for maximum water-absorbing capacity.

DAHL units are mounted on a convenient cart to be moved where needed. Just position the unit in a convenient location where it can be monitored occasionally for contaminant level.

Pipe Extension
For best suction control, use an appropriate diameter and length of pipe attached to the end of the suction hose. Notch the end of the pipe on both sides for good flow. If possible, periodically move the pipe location at the bottom of the tank.

SERVICING

DRAINING WATER

When free water is found in the hydraulic oil, it will generally be removed by the depressurizer cones found in the bowl. Other contaminants that are large enough and dense enough will also be removed by the depressurizer cones. For these reasons, the bowl should be visually inspected from time to time. The bowl must be drained before the level of water and contaminants reaches the depressurizer cone.

A. Turn unit off.

NOTE: On units with automatic vacuum-activated shut-off, the motor will shut off automatically when the pump produces a predetermined suction. Drain replace elements and press the reset button to resume operation.

B. Open the draincock up to 1/4 turn and drain all contaminants.

NOTE: If the contaminants will not drain out, slowly open the primer plug on the lid to allow air to enter the system.

C. Close the primer plug and draincock.

D. Prime the system, if necessary. Refer to ELEMENT REPLACEMENT section.

E. Start unit and check for leaks.

WATER-ABSORBING CARTRIDGE REPLACEMENT

A. When To Replace
The DAHL unit will shut off when the restriction of the filters causes the pump to produce a predetermined suction. The water-absorbing cartridge should be changed at this point.

B. How To Replace Water-Absorbing Cartridge

1. Turn on the override switch and check the vacuum reading. Note the vacuum rating. Turn the unit off.

NOTE: If the hydraulic oil tank is above the DAHL unit, close the shut-off valves or disconnect the DAHL unit to prevent oil from flowing out of the DAHL body when disassembling.

2. Drain the body by opening the draincock. It may be necessary to open the primer plug slightly to allow air to flow into the body. Drain only enough oil to allow easier handling of the filter body.
3. Close the draincock and primer plug.
4. Loosen the T-Bolt handle to release the filter body from the lid. (It is not necessary to completely remove the T-Bolt from the DAHL filter lids.) Support the filter body with your hand prior to release.
5. Remove the cartridge with a turning motion.
6. Inspect the ejector spring(s) at the bottom of the body. Also check the centerpipe O-Ring and replace if hard or damaged.
7. Remove and replace the lid cover gasket. Be sure the lid groove and body lip are clean. (Grease the lid cover gasket before positioning.)

C. Reassembly

1. Lubricate the top and bottom cartridge gaskets. Install the cartridge onto the centerpipe with a turning motion.
2. Fill the filter body with clean oil to within one inch of the top.
3. Double check the lid cover gasket position in the lid groove.
4. Attach the body to the lid and hand tighten the T-Bolt handle.
5. Start unit and check for leaks.

SYNTHETIC CARTRIDGE REPLACEMENT

A. When To Replace
The synthetic element is a secondary filter and should not become plugged as quickly as the water-absorbing cartridge. The actual life will be dependent upon the filtering conditions.

B. How To Replace Synthetic Cartridge

1. Drain the body by opening the draincock. It may be necessary to open the primer plug slightly to allow air to flow into the body. Drain only enough oil to allow easier handling of the filter body.
2. Close the draincock and primer plug.
3. Loosen the T-Bolt handle to release the filter body from the lid. (It is not necessary to completely remove the T-Bolt from the DAHL filter lids.) Support the filter body with your hand prior to release.
4. Remove the cartridge with a turning motion.
5. Inspect the ejector spring(s) at the bottom of the body. Also check the centerpipe O-Ring and replace if hard or damaged.
6. Remove and replace the lid cover gasket. Be sure the lid groove and body lip are clean. (Grease the lid cover gasket before positioning.)

C. Reassembly

1. Lubricate the top and bottom cartridge gaskets. Install the cartridge onto the centerpipe with a turning motion.
2. Fill the filter body with clean oil to within one inch of the top.
3. Double check the lid cover gasket position in the lid groove.
4. Attach the body to the lid and hand tighten the T-Bolt handle.
5. Start unit and check for leaks.

TROUBLESHOOTING

Poor performance of the recycler or blender units is usually caused by one or more of the following:

A. Air Leaks

1. **Fittings.** Insure the O-Rings on the fittings in the DAHL filter ports are lubricated and not damaged, cracked or dirty.

NOTE: When using JIC 37° fittings, be sure only mating JIC 37° fittings are used. Misalignment will occur and air leakage will result from an attempt to fasten a SAE 45° fitting to a JIC 37° fitting. Check for fitting looseness, seat dents, misalignment or unmatched threads. All fittings must be wrench tight.

2. **Bubbles In The Bowl.** If bubbles appear at the depressurizer cone, a leak is indicated between the tank and the inlet port.

NOTE: Old lines (rubber hose or metal tubing) may crack when moved. Check areas around push-on fittings, pipe adapters, hose clamps, etc. If air bubbles appear at the draincock, check for particles stuck in the valve seat or a partly open draincock. Also check for defective, miscentered or unlubricated bowl gaskets. Check the bowl plug O-Ring to make sure it is not cracked or extruded out of place. The bowl plug should be hand tightened only.

3. **Gaskets.** If the lid or bowl has been removed, make sure the gasket grooves are clean. Inspect the gaskets for proper seating in the grooves. Lubricate the gasket(s) with oil or grease.

B. Clogging and Restriction

1. **Lines.** Check for collapsed lines caused by sharp bends or excessive turns. Check the tank and/or filter shut-off valve(s).
2. **Filter Elements.** Early clogging can occur from badly contaminated fuel or oil (micro-organism growth, rust, sludge, dirt, etc). Always carry a spare DAHL element. Asphaltinic materials (fuel oxidation products), which are normally harmless to the injection system, can eventually plug original equipment filters remaining in the fuel system. If problems persist after the DAHL element has been replaced, also replace the other fuel filter elements.
3. **Filter Inlet.** Severely contaminated fluids may cause inlet plugging. In this event, close the tank supply shut-off valve (if equipped) and disconnect the inlet line. Remove the bowl and clean the inlet. Should the depressurizer cone also be plugged, disassemble and clean out.
4. **Bleed Back.** If fuel in the DAHL filter bleeds back to the fuel tank, an air leak or reverse flow valve problem is indicated. Inspect lines and fittings first as indicated above. If the reverse flow valve is clogged, use air or clean fluid to flush out.

C. Motorized Pump Malfunction

⚠ **Danger!** Electric Shock Hazard. Only qualified personnel should test or repair defective components.

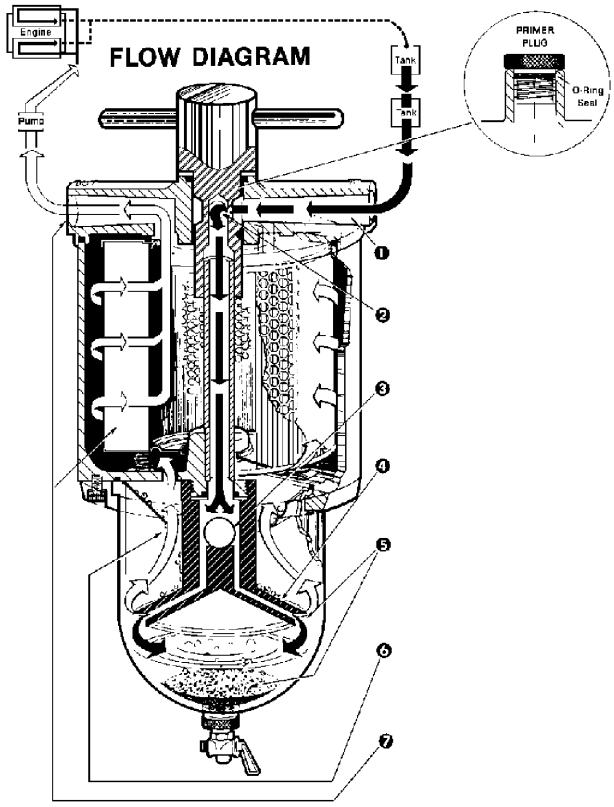
1. Check the power source and on-off toggle switch for operation.
2. On water-activated automatic shut-off models, drain the water or select the override position on the switch.

D. Water Sensor Light Malfunction

NOTE: This is a 12 Volt DC low voltage system. There is no danger of electrocution from the probes at the clear bowl even though the current is switched on.

1. With the unit on, test the light by temporarily attaching a test wire across the two probes at the clear bowl.
2. If the water level is above the probes and the light still does not work, refer to PROBE CLEANING section.

DAHL FLOW DIAGRAM



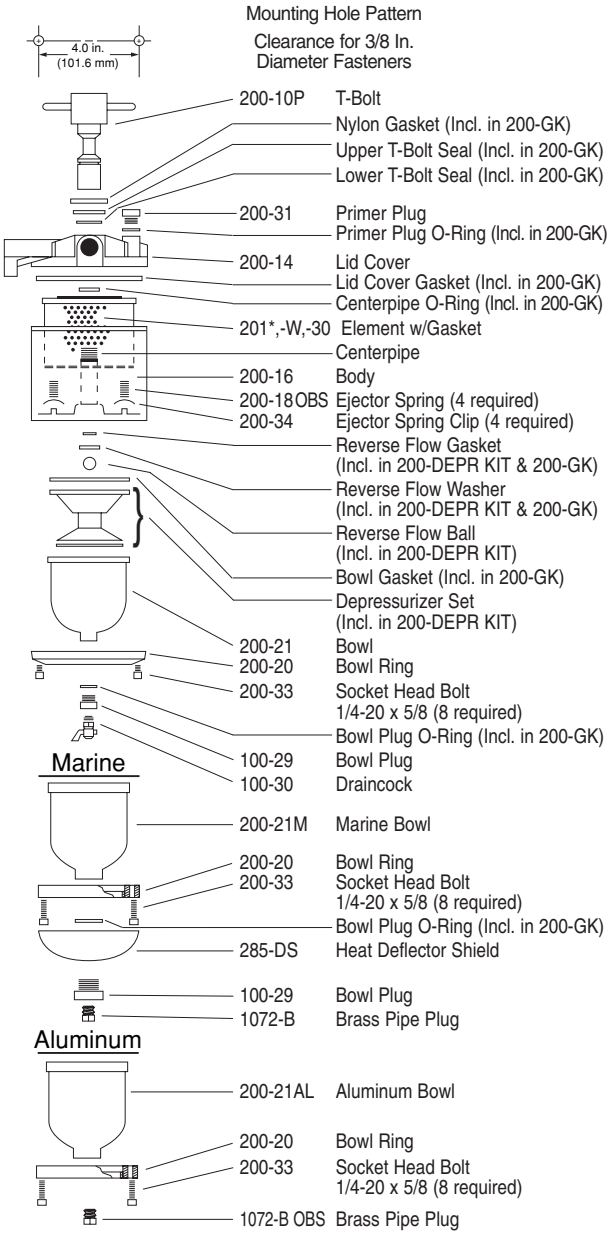
1. The contaminated fuel enters the inlet port.
2. The T-Bolt redirects the fuel downward through the centerpipe.
3. Fuel flows through the reverse flow valve.
4. Fuel flow is spread by the depressurizer cone.
5. As fuel is discharged from the depressurizer cone, 80% of contaminant separation takes place. Most of the solid particles and water settle into the quiet zone of the bowl.
6. As the fuel rises upward, any remaining minute water droplets coalesce on cone, baffle and bowl surfaces. Droplet size and weight gradually increase, causing downward flow into the sump.
7. Fuel is filtered completely by the element, which contains HydroShield™ media. The clean fuel then continues upward through the outlet port and on to the pump and injection system.

REBUILD PROCEDURE

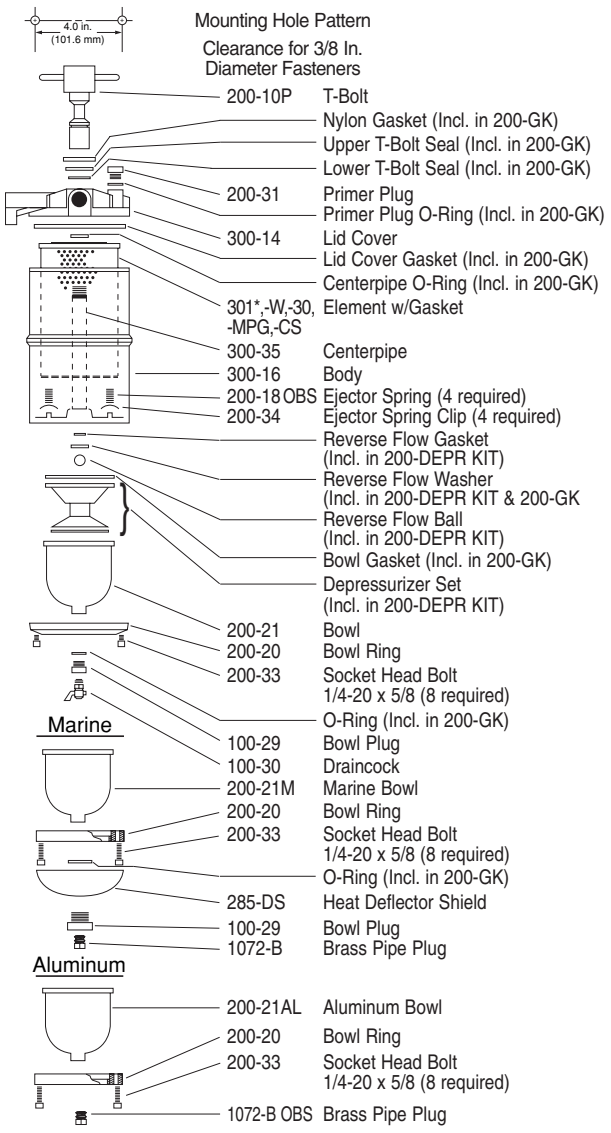
If it is ever necessary to dismantle the unit for inspection and/or possible repairs, refer to the parts illustration. Then follow these simple steps:

1. Refer to the appropriate ELEMENT REPLACEMENT steps for disassembly. (Dismount if desired.)
2. Remove the socket head bolts from the bowl ring to release the bowl. Stubborn bolts are easily removed by "shocking" the head. Place the allen wrench into the bolt and lightly rap the wrench with a hammer. Remove the bolt.
3. Unscrew the depressurizer cone to inspect the reverse flow valve. **Caution:** Cone edges are sharp. Use gloves or a rag for protection.
4. Check all parts for damage. Replace all damaged parts or hard gaskets. (Order Gasket Kit 200-GK.)
5. Refer to the parts illustration for reassembly. Clean all gasket grooves and contact surfaces of foreign matter. Coat the lid cover gasket with grease to hold in place before positioning and coat all other gaskets and O-Rings with diesel fuel. Hand tighten the depressurizer cone and wrench tighten the socket head bolts.
6. Again, refer to ELEMENT REPLACEMENT section to finish reassembly.

DAHL Model 200



DAHL Model 300



* Standard with Unit Unless Stated.

RECYCLER, RECYCLER/BLENDER & FUEL TRANSFER

DAHL Fuel/Water Separators

WHY DAHL?

Filters are a compromise wherever located. As a one-step strainer, a filter must be porous enough to allow sufficient flow volume. This means the filters which came with the equipment are usually in the 10-30 micron range.

However, if a more efficient media were used, the filter would become clogged very quickly, restricting the flow and resulting in frequent, costly element changes.

Not only that, many fuel filters are not designed to remove significant amounts of water, even though water is a primary cause of injector pump and nozzle damage.

Water and solid contaminants displace the diesel fuels lubricative coating on precision injection components. The loss of this protection results in wear, erosion, surface pitting and eventual fuel pressure loss.

THE SOLUTION

DAHL's functional dual chamber, 3-stage diesel fuel filter/water separators provide efficient suction side water separation and contaminant filtration. The key is the unique DAHL patented depressurizer cone, which spreads the flow of the fuel. The fact is, the more area to flow over, the slower the flow and the greater the separation of water and dirt from the fuel. DAHL diesel fuel filter/water separators have less mechanical flow resistance because the fuel changes direction only once.

COMPLETE EFFICIENCY

DAHL removes virtually 100% of the water and solid contaminants.

PROVEN PERFORMANCE

DAHL diesel fuel/water separators have been tested and proven over millions of miles and hours under all sorts of conditions. Ask anyone who has used DAHL, or any Baldwin user, as Baldwin Filters makes DAHL products.

MARINE DURABILITY

Marine units 75, 100-AL, 100-M, 100-M30 OBS, 150-AL, 150-M, 200-AL, 200-M, 200-M30, 200-MMV, 200-MMV30, 300-AL OBS, 300-M, 300-MM, 300-MM30, 300-MMV and 300-MMV30 have passed severe U.L. testing. Tests include fire endurance, vibration fatigue, impact and thermal shock. These filters have also met U.S. Coast Guard requirements for Marine Applications.

CLEAN FUEL

DAHL eliminates nearly all of the engine problems caused by water and solid contaminants in diesel fuel. In addition to saving you the cost of expensive repair bills and aggravation, you can expect:

- Longer Injection System Component Life
- Full Power Performance
- Less Element Replacement Cost

SUPERIOR ENGINEERING

- Die Cast Aluminum
- Impact-resistant large transparent bowl
- Element service life is several times longer than conventional
- Easy to install, service and clean
- Positive air elimination
- Advanced spring design assures positive element seal
- Less mechanical resistance because of streamlined flow path
- Baffle system is designed to stop emulsification and disperse trapped air
- Ball check valve to stop reverse flow
- Six series specifically designed to fit diesel engines of various capacities

Authorized Dealer

BALDWIN LIMITED WARRANTY

Baldwin Filters warrants each new Baldwin or DAHL Filter Product to be free from defects in workmanship and material as follows:

1. **Housings** one year from date of user's purchase.
2. **Electronics, Pumps and Motors** 90 days from date of user's purchase.
3. **Replaceable Elements, Spin-ons, Etc.** during equipment manufacturer's recommended filter service interval, if properly installed in a Baldwin recommended application.

Baldwin will replace or repair at its option, free of charge, any part still in the Baldwin warranty period found by Baldwin's inspection to be defective when such product is returned to place of purchase or to Baldwin Filters with transportation charges prepaid.

Specifically excluded from this warranty is damage resulting from excessive force, negligence, abuse, misuse, misapplication, tampering, improper installation, fire or accident. The warranty will not apply to any filter which has been cut apart or subject to tampering. Also, damage to plastic parts of fuel/water separators caused by the use of fluids containing alcohol is not covered by this warranty.

Full details of this warranty are in the Policy and Procedures Manual at the Baldwin or DAHL distributor or may be obtained from Baldwin's Service Engineering Department.

Baldwin Filters
Kearney NE 68848-6010
(800) 822-5394

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