

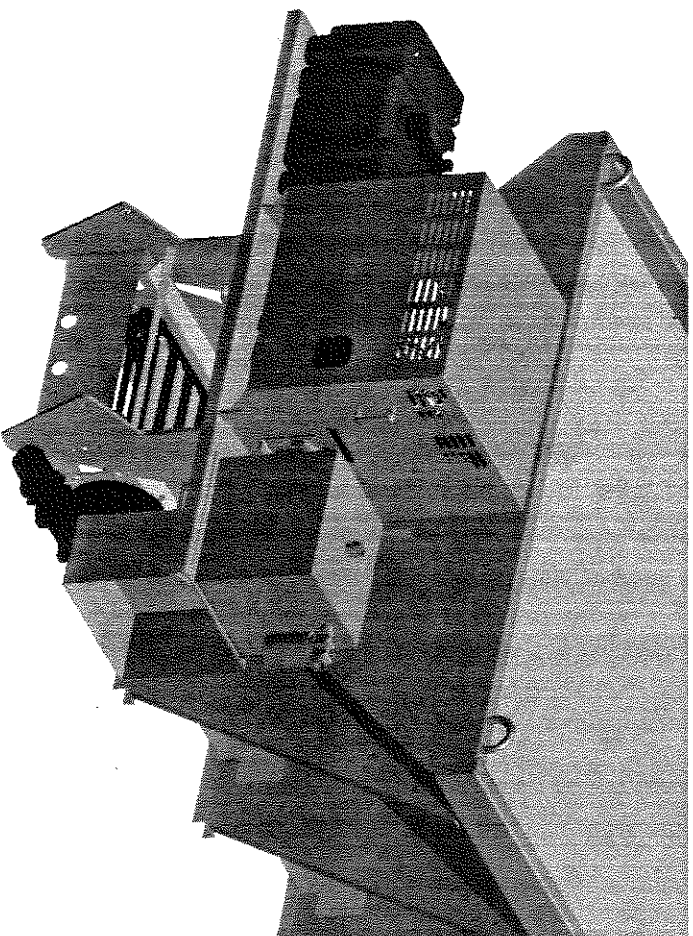
DO NOT THROW AWAY

INSTALLATION and OPERATING INSTRUCTIONAL MANUAL

READ BEFORE INSTALLATION

EVRRGH

REAR ENGINE V-BOX MATERIAL SPREADERS



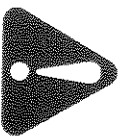
Manual No. 00119-544-01
April 30, 2004

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Swenson  **spreader®**

SAFETY PRECAUTIONS

THE BEST SAFETY DEVICE IS A CAREFUL OPERATOR!



This symbol means **ATTENTION!**
Become Alert!
Your safety is involved!
Please read and understand completely before operating!



Improper use of this equipment can result in serious injury. To reduce this possibility give complete and undivided attention to the job at hand, and follow these safety precautions.

PREPARATION

Know your controls. Read this instruction manual. Learn how to stop the equipment quickly in an emergency.

Do not allow children to operate machine; nor adults to operate it without proper instructions.

Keep all individuals not involved in the use of the equipment a safe distance away.

OPERATION:

Observe settings on all equipment controls, and shut off all equipment before starting engine so equipment will not intentionally operate when engine is started.

Always check area around machine before engaging or operating controls.

Always wear relatively tight and belted clothing when operating equipment. Loose jackets, shirts, sleeves or other loose clothing should not be worn because of the danger of catching them in moving parts or controls.

Stop and inspect equipment if unusual movement, sounds or noises are observed. Repair damage before restarting and operating the equipment.

Disengage power to all operating equipment: (1) before leaving operator's position, (2) before making any repairs, adjustment, or cleaning, or (3) when not in use.

Take all possible precautions when leaving the equipment unattended; such as disengaging the hydraulic system from the vehicle engine, shifting vehicle out of gear, setting parking brake, shutting off engine and removing key.

! WARNING!

FUEL IS EXPLOSIVE! Gasoline is extremely flammable and its vapors can explode if ignited. Keep away from flames or sparks.

CARBON MONOXIDE CAN BE POISONOUS! All engine exhaust contains carbon monoxide, a deadly gas. Breathing carbon monoxide can cause headaches, dizziness, drowsiness, nausea, confusion and eventually death.

Carbon monoxide is a colorless, odorless, tasteless gas which may be present even if you do not see or smell any engine exhaust. Deadly levels of carbon monoxide can collect rapidly and you can quickly be overcome and unable to save yourself. Also, deadly levels of carbon monoxide can linger for hours or days in enclosed or poorly-ventilated areas. If you experience any symptoms of carbon monoxide poisoning, leave the area immediately, get fresh air, and **SEEK MEDICAL TREATMENT.**

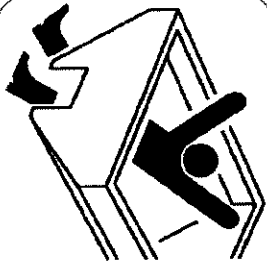
To prevent serious injury or death from carbon monoxide:

- NEVER run engine indoors. Even if you try to ventilate engine exhaust with fans or open windows and doors, carbon monoxide can rapidly reach dangerous levels.
- NEVER run engine in poorly-ventilated or partially enclosed areas such as barns, garages, basements, carports, under dwellings, or in pits.
- NEVER run engine outdoors where engine exhaust can be drawn into a building through openings such as windows and doors.

CAUTION

1. KEEP ALL BIRDS IN PLACE.
 2. MAKE CERTAIN EVERYONE IS CLEAR BEFORE STARTING MACHINE OR MOVING VEHICLE.
 3. KEEP HANDS, FEET, AND CLOTHING AWAY FROM ALL POWER DRIVEN PARTS.
 4. DISengage PTO, SHUT OFF HYDRAULIC VALVE, AND SET PARKING BRAKE BEFORE LEAVING OPERATOR'S POSITION. MAKE SURE ALL MOVEMENT HAS STOPPED BEFORE REMOVING, UNLOADING, OR CLEANING MACHINE.
 5. USE FLASHING LIGHTS WHEN OPERATING MACHINE.
 6. MAKE SURE MACHINE IS SOLIDLY SUPPORTED WHEN IT IS BEING MOUNTED, DISMOUNTED, OR STORED.
- IF DELETED - ORDER PART NO. 0646 045 00

This decal appears on the back left side of the spreader. It cautions all to observe general safety procedures when operating this equipment.




DANGER

Turn power off before servicing or cleaning

IF DELETED - ORDER PART NO. 0646 045 00

This decal appears on the back and front left and right sides of spreader. It alerts all to the danger of being caught inside the spreader when it is turned on, and where serious personal injury could result.

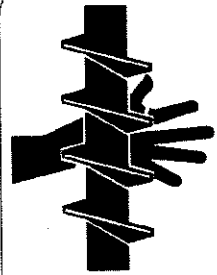


DANGER

Stay clear while spinner is turning

IF DELETED - ORDER PART NO. 0406 045 00

This decal appears near the spinner assembly on the back of the spreader. It alerts all to the danger of being struck by material being spread by the spinner assembly which could result in serious personal injury.



DANGER

Turn power off before servicing or cleaning

IF DELETED - ORDER PART NO. 0646 151 00

This decal appears on the back and front left and right sides of spreader. It alerts all to the danger of being caught in the dropout opening of the spreader conveyor where serious personal injury could result.

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INSTALLATION INSTRUCTIONS

The engine/hydraulic modular unit may be transferred from one standard V-Box to another. This unit CANNOT be mounted on a V-Box with replaceable chain shields.

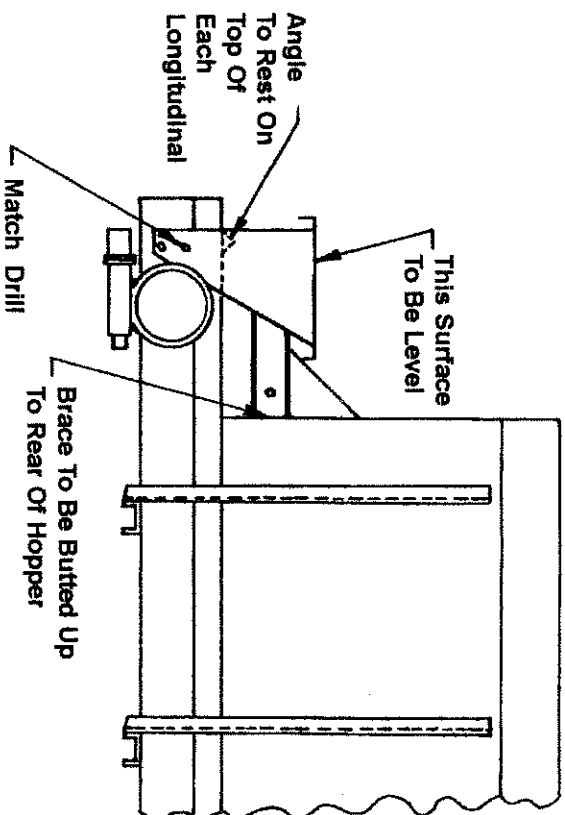
Mount the entire modular unit on the longitudinals, sliding it forward until the braces (channels sticking out) touch the back of the V-Box. These braces fit on the outside of the two gussets. Using the six 3/8" bolt holes as a guide, you may need to drill mounting holes in each gusset and longitudinal. Obtain six 3/8" x 1" bolts and flange nuts from hardware bag and secure modular unit to V-Box. Torque bolts to a recommended torque of 30-35 foot pounds.

To correctly install hydraulic hoses refer to the hydraulic assembly that reflects your system (see page 16).

Engine power cable may be routed along the V-Box per your convenience make sure not to kink the cable, route over sharp abrasive edges or route near any hot objects like mufflers, exhaust pipes etc.

NOTE:

ALL REAR ENGINE AND HYDRAULIC ASSEMBLIES ARE SHIPPED WITHOUT HYDRAULIC OIL AND WITHOUT GASOLINE. CHECK ALL FLUID LEVELS BEFORE OPERATING UNIT.



GETTING TO KNOW YOUR EQUIPMENT

The rear engine gas modular package is unique because, it is a fully self contained hydraulic power package. This package can be transferred from one V-Box spreader to another.

KOHLER ENGINE:

This is a Kohler Command 18 H.P. with special features: Electric throttle control, electric automatic choke, electric controlled engine oil shut down (low oil, engine shuts down), automotive type spin on oil filter, electric fuel shut-off (used to reduce back fire), and anti-icing air intake.

Thoroughly read the engine owners manual for recommended maintenance instructions and minor repairs. Any other repairs, consult your local area engine service repair center.

ELECTRIC/BATTERY:

The electrical system is protected by a 20 amp fuse. All wiring is color coded, using same color from the cab control box to the engine.

BATTERY:

The suggested battery is a 12 volt, top mounted post, group 24, with a minimum of 250 amps cold cranking. Size is width 6.5" to 7.5", length 10 to 11" and height 8.5" to 9". Battery cables are mounted. The flat wire appearing cable is negative, one end is bolted to the modular plate, the opposite end attaches to the negative terminal battery post. The positive cable is black rubber covered; one end bolts to the solenoid, the other bolts to the positive terminal batter post.

STATEMENT-----KOHLER ENGINE

The engine is an electric start model, with negative ground. This means the control panel must be properly grounded for the unit to start and function. Control panel features a night light, amp gauge, engine kill switch, throttle switch with Hi-Lo, starter button, a dump valve switch and a push button bypass button.

Looking at the control panel the switch next to the amp gauge is the engine kill and controls the entire system. When switch is in "Off" position the entire engine controls are off, when switched to "On" position a night light will come on, engine can then be started.

The next switch marked "Hi-Lo" is the throttle control. When in the "Hi" position throttle is wide open, in "Lo" position throttle is at idle. Next is the engine starter push button. Last switch is the solenoid electric control dump valve.

Next to the light is a push button switch when energized, allows for easier starting.

OPERATING INSTRUCTIONS

⚠ DANGER!

1. Before operating unit, read the engine owners manual, this manual and get to know all controls.
2. Before starting unit, make sure everyone is clear, be alert, watch for any thing that may require shutting system down.
3. When working in or around this unit, make sure the dual flow valve control lever is moved completely to "OFF" position.
4. Do not climb into the V-Box with the engine running.
5. Keep engine shroud cover closed at all times, except for maintenance work.
6. DO NOT attempt to make any adjustments or maintenance while the engine is running.

INITIAL START UP:

1. Fill reservoir about three-fourths full with high grade non-foaming, with hydraulic oil, with a viscosity of 100-200 SSU. Refer to Oil recommendations on page 20 & 21. KEEP OIL CLEAN! Clean oil prevents premature hydraulic system failure.
2. Check engine oil, making sure engine is properly filled.
3. Fill the gas tank with clean fresh regular grade unleaded gasoline with an octane of 87 or higher. DO NOT overfill, allow expansion room at the top for fuel expansion.

⚠ WARNING!

FUEL IS EXPLOSIVE! Gasoline is extremely flammable and its vapors can explode if ignited. Keep away from flames or sparks.

4. Move the dual flow valve control lever to "OFF" position. Turn spinner knob and auger knob OFF, "0" setting. Make sure solenoid valve is OFF.
5. Start the unit, place the engine kill switch to "ON", then place the throttle switch to "HI", and press starter button and the black button. After unit starts, place throttle switch to "LO", allow engine to warm up.
6. STAND CLEAR OF THE SPINNER ASSEMBLY, energize solenoid valve switch, move the valve control lever to "ON". Turn the knobs marked "SPINNER" and "AUGER" counterclockwise between 6-8 which will engage the spinner and auger. Allow the hydraulic oil to circulate several minutes, approximately 5 to 10 minutes.
7. Move the valve control lever to "OFF". Check entire hydraulic system for leaks.
8. Check hydraulic reservoir, make sure it is three-fourths full.

OPERATING INSTRUCTIONS

(Continued)

SPREADER OPERATION:

1. Start engine and allow hydraulic system to warm up by shutting "OFF" spinner and conveyor knobs and moving "ON-OFF" lever to "ON" position. The solenoid dump valve switch must be "ON".
2. Turning the knob marked "SPINNER" counter clockwise will increase the spinner speed and width of spread.
3. Turning the knob marked "AUGER" counter clockwise will increase the conveyor speed and thus the amount of material spread.
4. The gate on the rear of the V-Box will also allow more material to pass to the spinner when opened wider.
5. The directional chute over the spinner will control the direction of the spread pattern. If the baffle is located to drop the material on the left side of the spinner disc, then the pattern will be behind and to the right side of the truck. If the baffle directs the material to the right side of the disc, then the pattern will be behind and to the left side of the truck. A little experimenting with the different positions of the baffles and the spinner speed control will show the pattern spread exactly as desired for direction and width.
6. Spinner and conveyor may be stopped at the same time without changing their valve settings by moving the "ON/OFF" lever to "OFF" position.

NOTE: THE MATERIAL BEING SPREAD, USING EITHER ENGINE, MAY BE STARTED AND STOPPED ANYTIME BY TURNING THE SOLENOID VALVE SWITCH "ON" AND "OFF" WHILE TRUCK IS IN MOTION.

RECOMMENDED MAINTENANCE



ALWAYS SHUT THE ENGINE OFF BEFORE PERFORMING MAINTENANCE ON THE UNIT!

ALWAYS REPLACE ENGINE SHROUD WHEN MAINTENANCE IS COMPLETE!

1. Maintain a three-fourths full reservoir using high grade non-foaming hydraulic oil. (See page 19.)
2. Avoid getting contaminants in reservoir when filling.
3. Replace filter cartridge with new cartridge at least twice a year and more often if necessary. (If installed, filter condition gauge has red zone indicating when cartridge needs changing.)
4. Periodically check all bolts and setscrews for tightness.
5. Periodically check the engine and pump drive sprockets for wear and grease the coupling chain.
6. After unit has run for a long period of time, check all hoses for abrasion, wear, kinks, etc. Also, check all connections for tightness. Any fraying or cuts in hoses and connection leaks must be repaired immediately.
7. Periodically check all electrical wiring and connections for tightness.
8. Follow engine manufacturers' instructions for engine maintenance recommendations.

HYDRAULIC TROUBLE-SHOOTING CHART

CONDITION 1

Pump cavitation recognized by excessive noise.

CAUSE

- a. Air entering system through suction lines.
- b. Suction line kinked, twisted or too long.
- c. Inadequate size suction line.
- d. Hydraulic oil too heavy.
- e. Excessive pump speed. Normal pump speed 1200 to 1500 RPM.

CORRECTION

- a. Check line from reservoir for possible leaks.
- b. Install suction line as short and straight as possible.
- c. Increase suction line size.
- d. Drain and replace with a lower viscosity non-hydraulic oil.
- e. Pump capacity is 16 GPM at 1000 RPM. Decrease PTO speed accordingly.

CONDITION 3

Erratic operation of conveyor and/or spinner.

CAUSE

- a. Low oil level in reservoir.
- b. Worn or defective motor.
- c. Dirty, worn or defective flow control valve.
- d. Plugged filter.
- e. Relief valve setting too low.
- f. Pump cavitation.
- g. Air vent on reservoir tank is blocked.

CORRECTION

- a. Fill reservoir to a 3/4 full level.
- *b. Repair or replace motor.
- *c. Clean, repair or replace flow control valve.
- d. Replace filter element and clean filter.
- e. Adjust relief valve for 1500 PSI.
- f. Refer to CONDITION 1.
- g. Clean or replace vent cap to admit atmospheric pressure to inside of tank.

CONDITION 2

Slow operation of conveyor and/or spinner.

CAUSE

- a. Worn or defective pump.
- b. Worn or defective motor.
- c. Pump cavitation.
- d. Insufficient pump speed.

CORRECTION

- *a. Repair or replace pump.
- *b. Repair or replace motor.
- c. Refer to CONDITION 1.
- d. Pump capacity is 16 GPM at 1000 RPM. Increase PTO speed accordingly.

CONDITION 4

Conveyor and/or spinner will not operate, or operates in wrong direction.

CAUSE

- a. Quick disconnects are dirty or damaged causing incomplete connection.
- b. Hose connections wrong, causing motors to operate in wrong direction.
- c. Foreign material in valve compensator section.

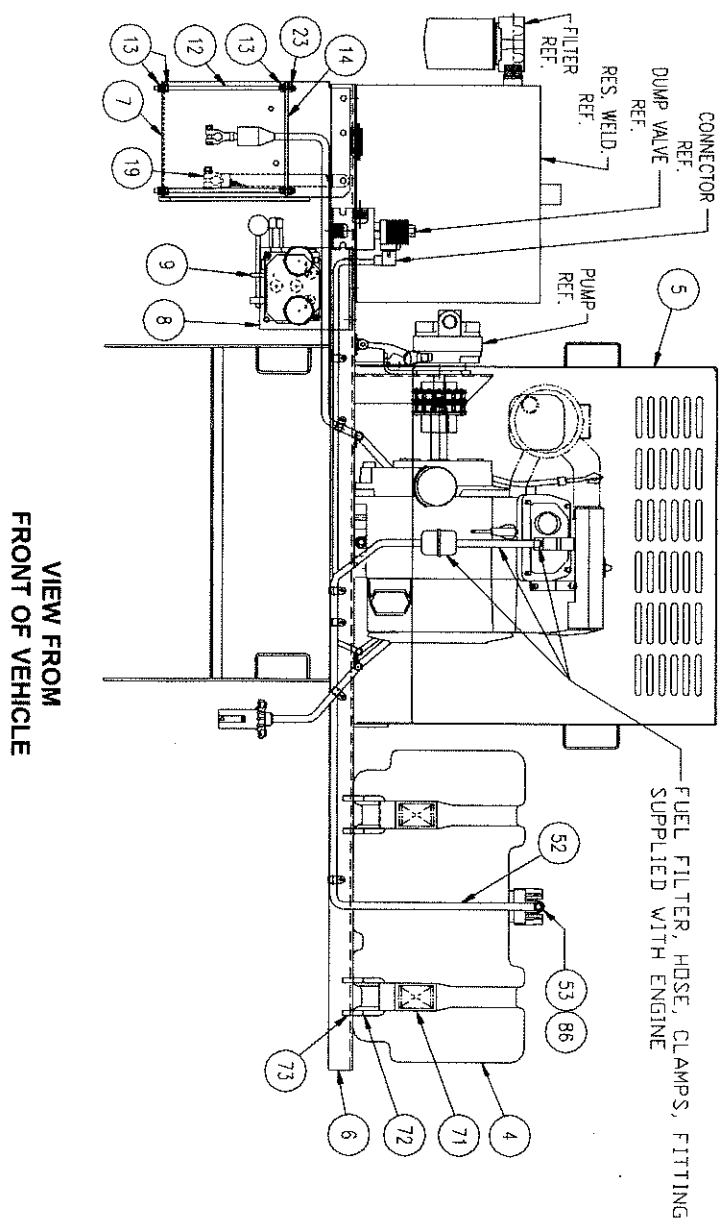
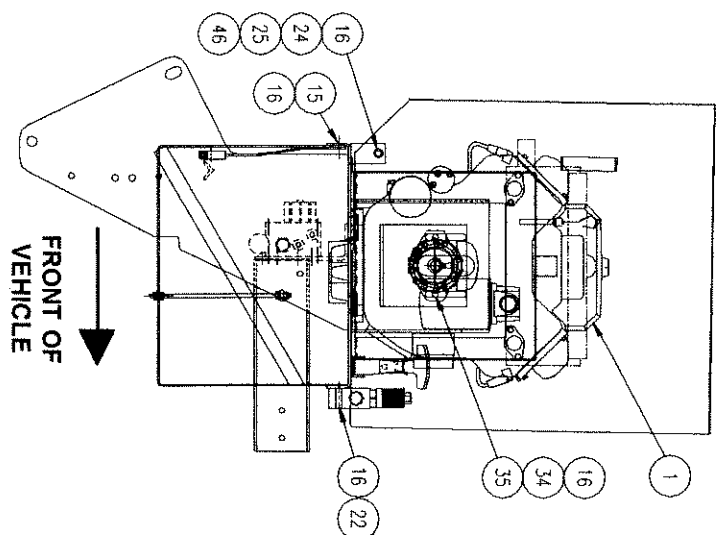
CORRECTION

- a. Clean or replace and properly connect.
- b. Refer to plumbing diagram for proper hose connections, and reconnect.
- c. Refer to illustration for proper hose connections at motor and reconnect.
- d. Remove compensator section and clean.

NOTE: If a motor operates in the wrong direction, reverse hose connections at motor ports (usually easier).

NOTE: *Swenson Spreader Company warranty does not cover unauthorized disassembly of hydraulic pumps, motors, valves or electric components.

ASSEMBLY, ENGINE & HYDRAULIC EVRGH



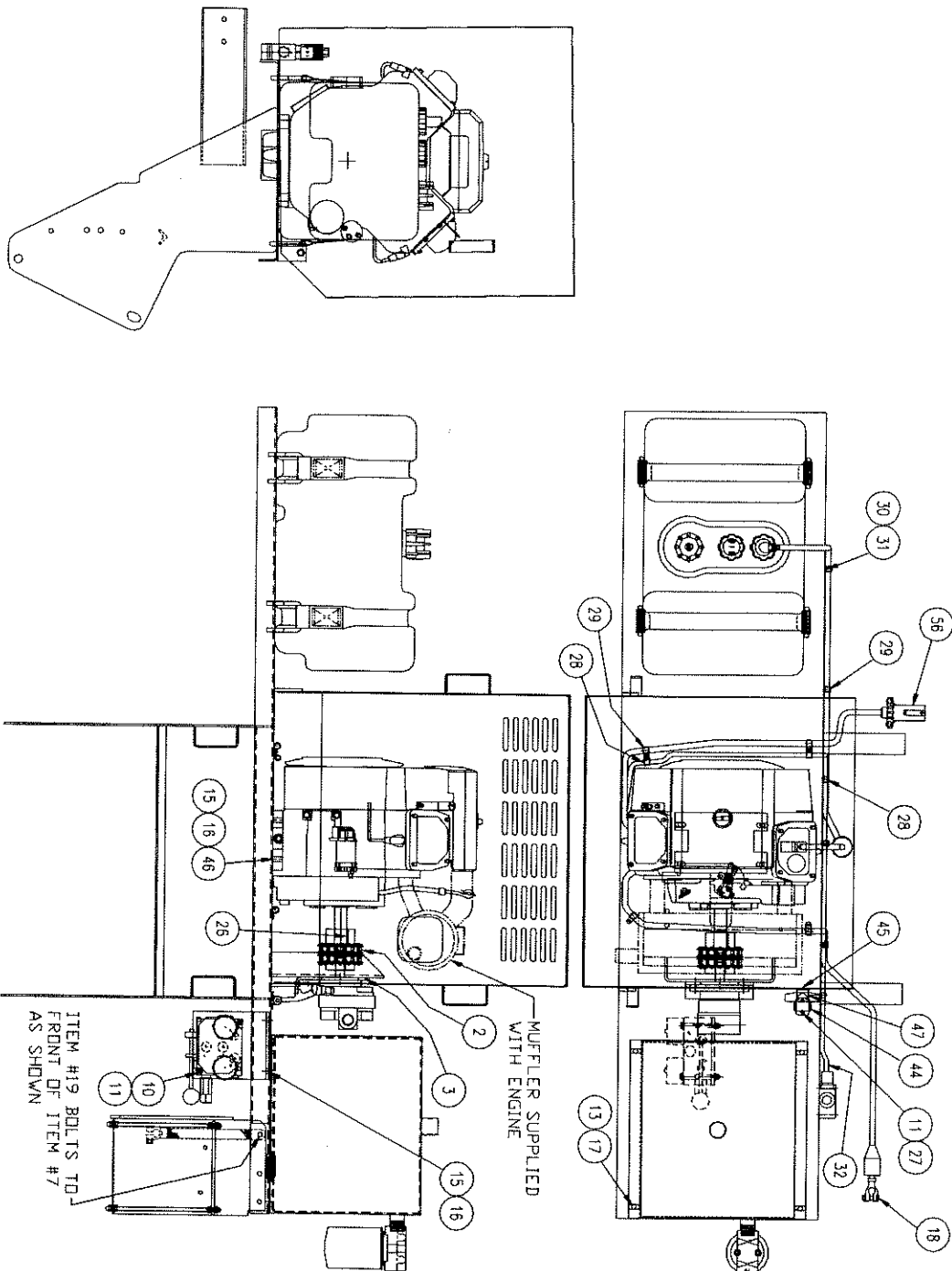
ASSEMBLY, ENGINE & HYDRAULIC EVRGH

(00118-030-00 & 00118-030-01)

Item	Part Number	Qty.	Description	Item	Part Number	Qty.	Description
1	04145-065-00	1	Engine, 18 HP Kohler	34	04004-002-08	2	Flatwasher, 3/8" U.S.S., ZP
N/S	04144-240-00	1	Filter, Pre Clean		04004-002-20	2	Flatwasher, 3/8" U.S.S., SS
N/S	04144-241-00	1	Filter, Air	35	04003-003-18	2	Bolt, 3/8"-16 X 1 3/4" HH, Gr. 5, ZP
N/S	04144-242-00	1	Filter, Oil		04003-003-57	2	Bolt, 3/8"-16 X 1 3/4" HH, SS
N/S	04144-010-00	1	Bowl, Sediment (Texas)	46	04004-002-07	10	Flatwasher, 5/16" U.S.S., ZP
N/S	04103-034-00	1	Filter, Fuel (Texas)		04004-002-25	10	Flatwasher, 5/16" U.S.S., SS
N/S	04122-039-00	1	Tank, Fuel	52	04124-001-00	4	Hose, 1/4" Neoprene
4	00108-240-00	1	Weld, Engine Shroud, Carbon	53	04109-001-00	1	Fitting, 1/8" x 1/4" Barb
5	00111-708-00	1	Weld, Engine Shroud, Stainless Steel	71	04065-007-00	2	Strap
6	00118-029-00	1	Weld, EVRG Platform, Carbon	72	04048-524-01	4	U-Bolt, 3/8" Square
7	00118-029-01	1	Weld, EVRG Platform, Stainless Steel	73	04003-804-02	8	Locknut, 3/8"-16 Nylon Insert, ZP
8	00109-428-00	1	Weld, Battery Case, Carbon		04003-804-08	8	Locknut, 3/8"-16 Nylon Insert, SS
9	00109-428-01	1	Weld, Battery Case, Stainless Steel	86	04110-017-17	1	Bushing, 1/4" X 1/8" Hex Reducing Brass
10	00101-199-00	1	Bracket, Valve Mounting, Carbon				
11	00101-199-01	1	Bracket, Valve Mounting, Stainless Steel				
12	04105-285-00	1	Valve, Dual Flow 7/15				
13	00104-802-00	2	Rod, Battery, Carbon				
14	00117-776-00	2	Rod, Battery, Stainless Steel				
15	04003-806-01	10	Nut, 5/16"-18 Serrated Flange, ZP				
16	04003-806-13	10	Nut, 5/16"-18 Serrated Flange, SS				
17	04604-017-00	1	Hold-down				
18	04003-003-04	12	Bolt, 3/8"-16 X 1 1/4" HH Gr. 5, ZP				
19	04003-003-26	12	Bolt, 3/8"-16 X 1 1/4" HH, SS				
20	04003-003-02	14	Nut, 3/8"-16 Serrated Flange, ZP				
21	04003-806-12	14	Nut, 3/8"-16 Serrated Flange, SS				
22	04604-001-00	1	Strap, 9" Ground				
23	04003-003-08	2	Bolt, 3/8"-16 X 2 1/2" HH Gr. 5, ZP				
24	04003-003-21	2	Bolt, 3/8"-16 X 2 1/2" HH, SS				
25	04003-804-01	2	Locknut, 5/16"-18 Nylon Insert, ZP				
26	04003-804-29	2	Locknut, 5/16"-18 Nylon Insert, SS				
27	04008-001-00	2	Bushing, 3/8" I.D. X 5/8" O.D.				
28	04008-007-00	2	Bushing, Spacer, SS				
29	04003-003-05	4	Bolt, 3/8"-16 X 1 1/2" HH Gr. 5, ZP				
30	04003-003-28	4	Bolt, 3/8"-16 X 1 1/2" HH, SS				

ASSEMBLY, ENGINE & HYDRAULIC EVERGH

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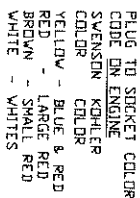


ASSEMBLY, ENGINE & HYDRAULIC EVRGH

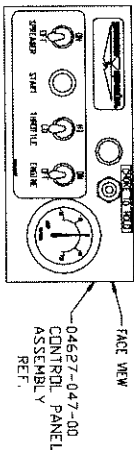
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Item	Part Number	Qty.	Description
2	04038-018-00	1	Assembly, Chain Coupler
3	09536-000-00	1	Space Pump
10	04003-080-03	2	Bolt, 1/4"-20 x 3 1/2" Socket Cap
11	04003-806-05	2	Nut, 1/4"-20 Serrated Flange, ZP
13	04003-806-01	10	Nut, 5/16"-18 Serrated Flange, ZP
15	04003-003-04	12	Bolt, 3/8"-16 X 1 1/4" HH Gr. 5, ZP
16	04003-003-26	12	Bolt, 3/8"-16 X 1 1/4" HH, SS
17	04003-806-02	14	Nut, 3/8"-16 Serrated Flange, ZP
18	04003-806-12	14	Nut, 3/8"-16 Serrated Flange, SS
26	04003-002-03	4	Bolt, 5/16"-18 X 7/8" HH Gr. 5, ZP
27	04003-002-24	4	Bolt, 5/16"-18 X 1" HH, SS
28	04604-009-00	1	Cable, Battery
29	04031-010-00	1	Key, 1/4" SQ. X 2"
30	04003-001-02	2	Bolt, 1/4"-20 X 3/4" HH Gr. 5, ZP
31	04003-001-11	2	Bolt, 1/4"-20 X 3/4" HH, SS
32	04607-004-00	4	Clamp, 3/8" Nylon Cable
44	04607-018-00	8	Clamp, 1/2" Nylon
45	04003-070-04	10	Screw, #10-32 X 3/4" Phillips RH, SS
46	04003-070-05	10	Screw, #10-32 X 1/2" Phillips RH, SS
47	04003-804-27	10	Locknut, #10-32 Nylon Insert, SS
56	04610-012-00	2 Ft.	Tubing, 1/4" I.D. X 3/8" O.D. Clear PVC
	04019-013-01	1	Handle, Latch
	04002-069-01	4	Screw #10-24 X 3/4" HWH TEKS/3
	04004-002-07	10	Flatwasher, 5/16" U.S.S., ZP
	04004-002-25	10	Flatwasher, 5/16" U.S.S., SS
	04019-013-02	1	Keeper, Latch
	04627-043-00	1	Assembly, Engine Control Cable

(Kohler 18 H.P.)
(B00115-262-00)

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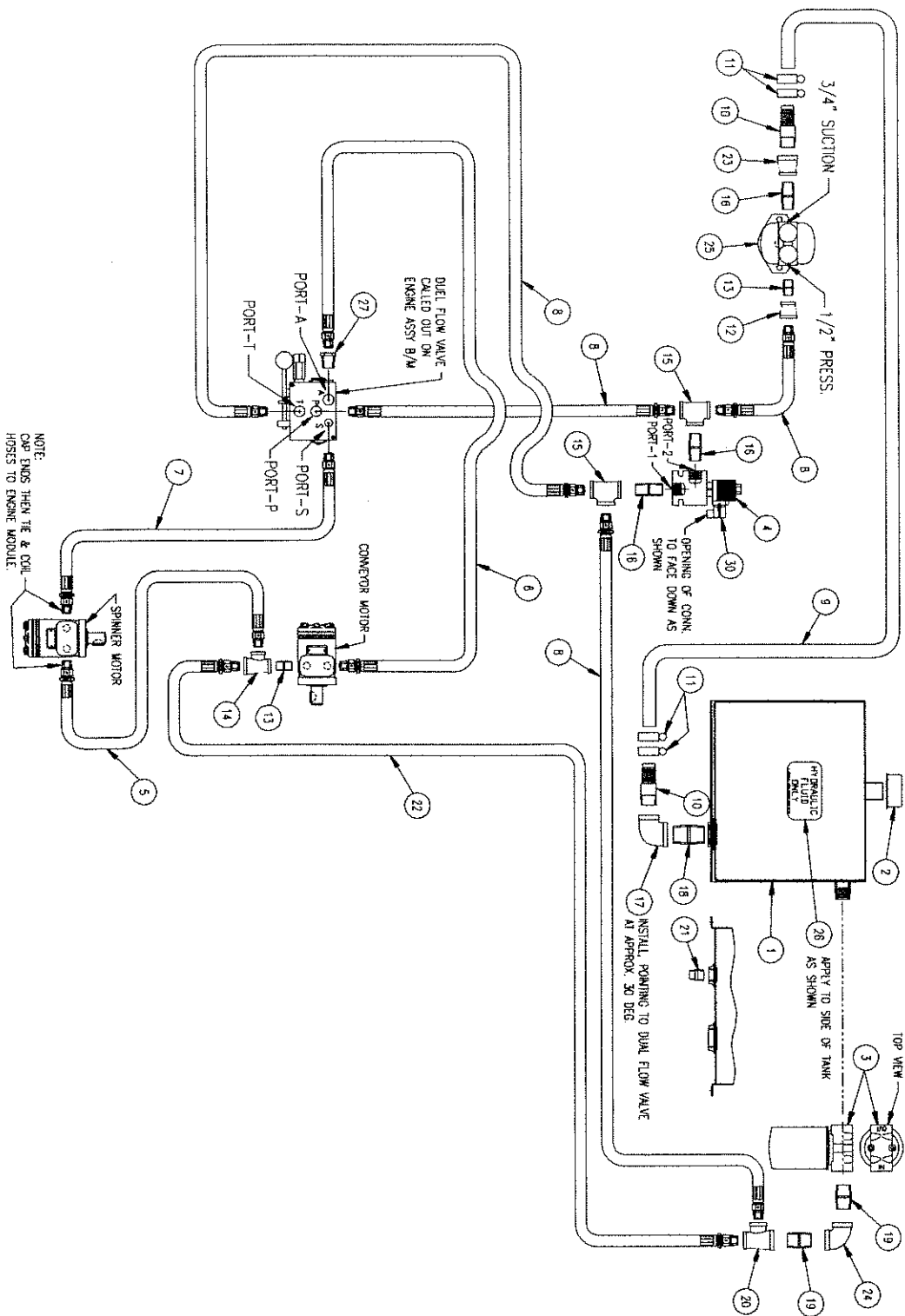
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PLUMBING FOR HYDRAULIC EVRGH

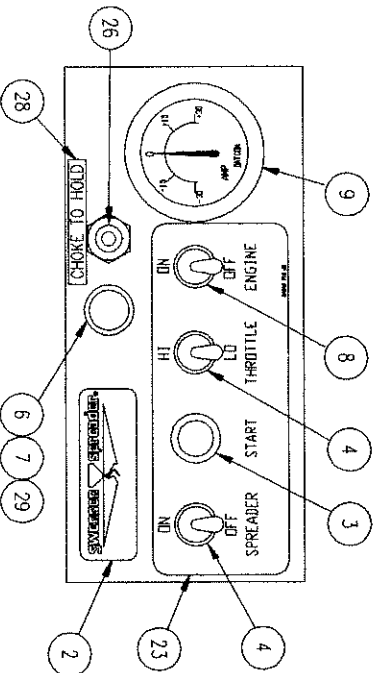
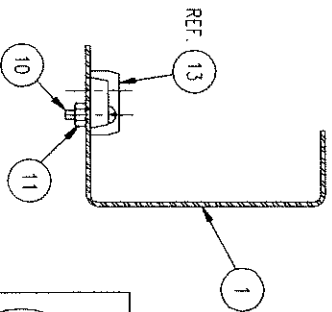
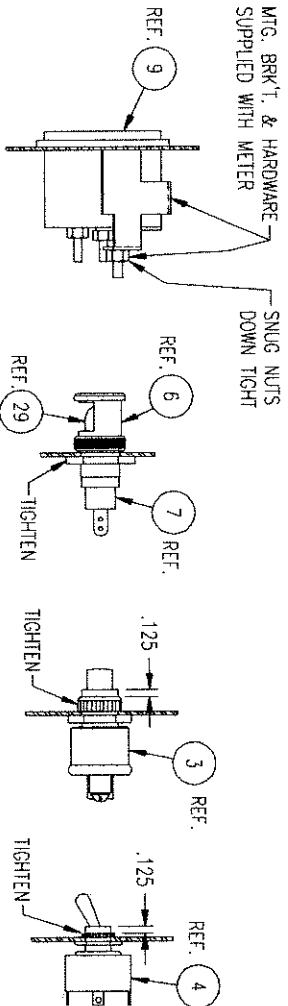
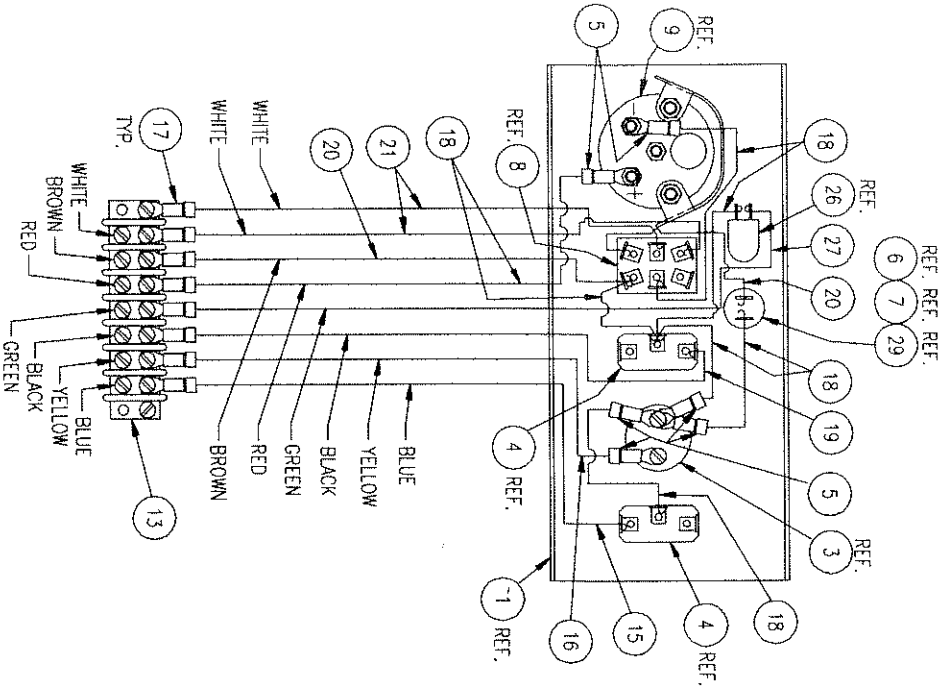
(00108-220-00)



PARTS LIST FOR HYDRAULIC PLUMBING EVRGH

<u>Item</u>	<u>Part Number</u>	<u>Qty.</u>	<u>Description</u>
1	00106-480-00	1	Weld, Reservoir
2	04123-001-00	1	Cap, Breather
3	04103-005-00	1	Assembly, Hydraulic Filter
4	04105-320-00	1	Valve, Solenoid Dump
4a	04105-320-01	1	Cartridge (Compact Controls)
	04105-320-04	1	Cartridge (Delta Power)
4b	04105-320-02	1	Coil (Compact Controls)
	04105-320-05	1	Coil (Delta Power)
5	04120-003-12	1	Hose, 1/2" X 60" (1) Wire
6	04120-003-30	1	Hose, 1/2" X 36" (1) Wire
7	04120-003-31	1	Hose, 1/2" X 80" (1) Wire
8	04120-007-21	4	Hose, 3/4" X 29" (2) Wire
9	04120-025-04	1	Hose, 1" X 26" Suction
10	04121-012-03	2	Nipple, 1" King
11	04090-015-00	4	Clamp, 1 1/4" Hose
12	04110-014-04	1	Coupling, 3/4" X 1/2" Pipe Reducing
13	04110-027-01	2	Nipple, 1/2" Close
14	04110-011-05	1	Tee, 3/4" X 1/2" X 1/2" Reducing
15	04110-010-04	2	Tee, 3/4"
16	04110-028-01	3	Nipple, 3/4" Close
17	04110-008-06	1	Elbow, 1 1/4" X 1" Reducing
18	04110-030-01	1	Nipple, 1 1/4" Close
19	04110-029-01	2	Nipple, 1" Close
20	04110-011-08	1	Tee, 1" X 3/4" X 3/4" Reducing
21	04110-019-02	1	Plug, 3/4" Drain
22	04120-006-18	1	Hose, 3/4" X 42" (1) Wire
23	04110-014-05	1	Coupling, 1" X 3/4" Pipe Reducing
24	04110-004-06	1	Elbow, 1" 90 Degree
25	04102-138-00	1	Pump, Hydraulic
26	04049-137-00	1	Decal, Hydraulic Oil
27	04110-017-04	1	Bushing, 3/4" X 1/2" Hex Red.
30	04105-321-00	1	Connector, 1/2" Conduit

ASSEMBLY CONTROL BOX



PARTS LIST ASSEMBLY CONTROL BOX

(04627-047-00)

Item	Part Number	Qty.	Description
1	00108-334-00	1	Bracket, Control Mounting
2	04049-062-00	1	Decal, Swenson Logo
3	04144-008-00	1	Switch, Push Button
4	04640-005-00	2	Switch, ON-OFF
5	04638-039-03	6	16-14 Ga. #10 Ring Terminal
6	04605-148-00	1	Cap
7	04605-149-00	1	Terminal, Solder
8	04640-021-00	1	Switch, ON-OFF Toggle
9	04144-005-00	1	Meter, Amp
10	04003-063-02	2	Screw, #8-32 X 3/4" Slotted Rd.ZP
11	04003-804-16	2	Locknut, #8-32 Nylon Insert, ZP
13	04606-001-00	1	Block, Terminal (7 Connector.)
15	04616-029-00	.333 Ft.	Wire, 18 Ga. Blue
16	04616-028-00	.333 Ft.	Wire, 18 Ga. Yellow
17	04638-040-06	8	16-14 Ga. #6 Spade Terminal
18	04616-032-00	1.667 Ft.	Wire, 16 Ga. Red
19	04616-026-00	.333 Ft.	Wire, 18 Ga. Black
20	04616-022-00	.667 Ft.	Wire, 14 Ga. Brown Insulated
21	04616-042-00	.708 Ft.	Wire, 18 Ga. White
23	04049-210-00	1	Decal, Panel
26	04640-032-00	1	Switch, Push Button
27	04616-030-00	.300 Ft.	Wire, 18 Ga. Light Green
28	04049-347-00	1	Decal Choke
29	04605-150-00	1	Lamp, Type 756, T-3, 1/4 Bayonet

HYDRAULIC OIL RECOMMENDATIONS

PETROLEUM BASE HYDRAULIC FLUID

Because of the more sophisticated hydraulic equipment, a greater demand has been placed on the quality of hydraulic fluids required to provide satisfactory machine life. The manufacturers are becoming increasingly aware that proper lubrication and preventive maintenance are important in keeping machine downtime to a minimum.

The purpose of this bulletin is to provide our customers with useful guidelines in selecting hydraulic fluids for efficient and satisfactory operation of components sold by Swenson Spreader Company. It is not our intent to recommend any specific brand or manufacturer.

To provide the most desirable anti-wear qualities, the hydraulic fluids should contain the following:

1. Correct viscosity.
2. High viscosity index.
3. High film strength and proper lubricity.
4. High oxidation resistance.
5. Good water separating ability.
6. Good antirust property.
7. Good resistance to foaming.

Proper viscosity at operating temperature is probably the single most important property the fluid must possess. Without the correct viscosity, the life expectancy of pumps and motors may be reduced as much as half. Viscosity of not less than 100 SSU at operating temperatures is preferred.

However, during continuous operation, the recommended viscosity should be 100-200 SSU. Except with special engineering considerations, systems temperatures should be limited to 180° F.

Ambient temperatures affect systems temperature especially at the extremes, high or low. This must be considered in the selection of fluids with proper viscosity to meet different temperature conditions. Operating temperature is the

most important factor when selecting the proper viscosity grade. You will find a chart on page 20 which will give the desired viscosity of 100 SSU to 200 SSU, if the operating temperatures fall within these limits.

LOW TEMPERATURE START-UP CONSIDERATION

Where equipment is stored in unheated buildings and low ambient temperatures below 20° F prevail, seasonally or regularly, viscosity of normally recommended fluid may increase to an extent that it affects hydraulic components at starting and warm-up. It may be necessary to change fluids seasonally to assure maximum system efficiency and life.

SYSTEMS CLEANLINESS

Cleanliness of fluids is of extreme importance. Past experience has proven life of hydraulic components is directly proportional to system cleanliness. Filters should be selected on the basis of the type of fluid being filtered, proper micron rating must be considered, filter types, and capacities. Our recommendation is that the filter element have a 10 micron rating or finer.

Oil reservoirs should have vented caps, and caps must be kept in place at all times. Care must be taken when adding oil to the system to prevent foreign matter getting into the reservoir. When fluid is added, be sure it is compatible with the existing system fluids. Changing filter element twice a year helps to protect expensive hydraulic components and possible downtime when equipment is most needed.

DESIRED VISCOSITY

<u>MANUFACTURER</u>	<u>FLUID NAME</u>	<u>SYSTEM OPERATING TEMPERATURE RANGE WHICH WILL MAINTAIN VISCOSITY OF 100/200 SSU</u>	
Atlantic Richfield	Duro AW-S-150	92° F / 121° F	
	Duro AW-S-215	100° F / 134° F	
	Duro AW-S-315	117° F / 152° F	
Cities Service	Pacemaker XD-15	90° F / 121° F	
	Pacemaker XD-20	102° F / 134° F	
	Pacemaker XD-30	114° F / 149° F	
Mobile	DTE 24	87° F / 120° F	
	DTE 25	103° F / 137° F	
	DTE 26	115° F / 150° F	
Shell	Tellus 923	78° F / 109° F	
	Tellus 927	91° F / 124° F	
	Tellus 929	103° F / 135° F	
Texaco	Tellus 933	177° F / 152° F	
	Rando HD 32	90° F / 122° F	
	Rando HD 46	106° F / 139° F	
	Rando HD 68	118° F / 151° F	

SERIAL NUMBER DECAL INFORMATION

When ordering parts or requesting information or assistance, always include the information listed below.

The description, part number and serial number for the spreader is shown on the serial number decal.

The space below is provided as a convenient place to record these number just fill in the blanks.

DESCRIPTION _____

PART NUMBER _____

SERIAL NUMBER _____

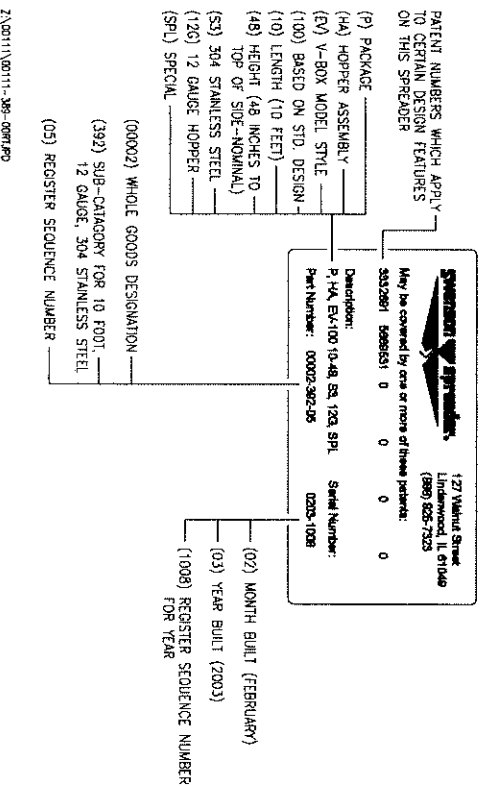
DATE PURCHASED _____

PURCHASED FROM _____

DEALER'S SERVICE DEPARTMENT PHONE NUMBER _____

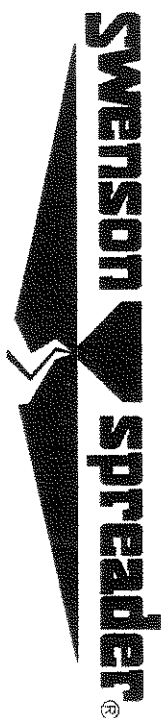
NOTE: Numbers shown on decal below are for example purposes only.

EXPLANATION OF SERIAL NUMBER DECAL



CALL YOUR AUTHORIZED SWENSON SPREADER DEALER FOR PARTS AND SERVICE
 SWENSON SPREADER (815) 393-4455
 TOLL FREE (888) 825-7323
 FAX (866) 310-0300
 email: swensonsales@swensonspreader.com
 website: www.swensonspreader.com

SWENSON SPREADER COMPANY
P.O. BOX 127 - LINDENWOOD, ILLINOIS 61049



Effective 5/1/88

Dealers have the responsibility of calling to the attention of their customers the following warranty prior to acceptance of an order from that customer for any SWENSON® product.

WARRANTY

SWENSON warrants to the original purchaser for use that, if any part of the product proves to be defective in material or workmanship within one year from the date of original installation, and is returned to SWENSON within 30 days after such defect is discovered, SWENSON will (at our option) either replace or repair said part. This warranty does not apply to damage resulting from misuse, neglect, accident or improper installation or maintenance. Said part will not be considered defective if it substantially fulfills the performance specifications. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR PURPOSE AND OF ANY OTHER TYPE, WHETHER EXPRESS OR IMPLIED. SWENSON® neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with said part and will not be liable for consequential damages.

All gasoline engines and hydraulic pumps are warranted by their manufacturer and not by Swenson Spreader Company. Electrical or hydraulic components are not to be disassembled without the express written permission of Swenson Spreader Company. Defective parts returned to Swenson Spreader Company must be accompanied by the following information: spreader model, serial number, date installed and dealer from whom purchased.

Purchaser accepts these terms and warranty limitations unless the product is returned within fifteen days for full refund of purchase price.

THROTTLE SOLENOID 04144-223-00

IMPORTANT INFORMATION ENCLOSED



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