SMITHCO

Wayne, Pennsylvania 19087

OWNER'S MANUAL

TOPLINER V

MODEL # 44-701

Starting Serial #LN595

June, 2000

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INTRODUCTION

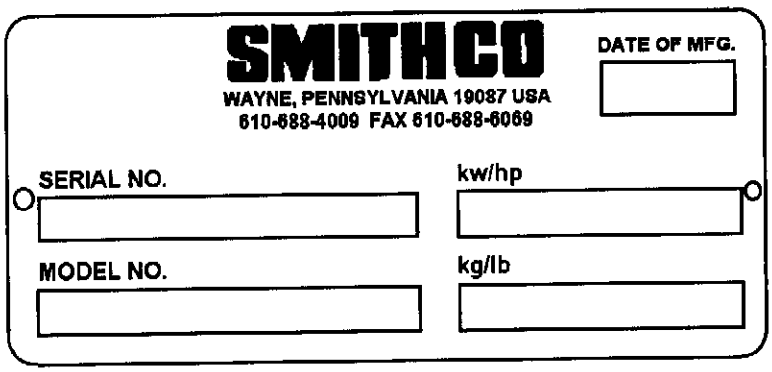
Thank you for purchasing a **SMITHCO** #44-701 Topliner V.

Carefully read this manual and all other Topliner V manuals as they include safety, operating, assembly and maintenance instructions. Failure to do so could result in personal injury or equipment damage.

Keep manuals in a safe place after operator and maintenance personnel have read them. Right and left sides are from the operator's seat, facing forward.

All **SMITHCO** machines have a Serial Number and Model Number. Both numbers are needed when ordering parts. The serial number plate on the #44-701 Topliner V is located under the manifold console, on the left side wall of the liner.

For easy access, record your Serial and Model numbers here.



Information needed when ordering replacement parts:

1. Model Number of machine.
2. Serial Number of machine.
3. Name and Part Number of part.
4. Quantity of parts.

SAFE PRACTICES

1. **It is your responsibility to read this manual and all publications associated with this machine (engine and accessories).**
2. Never allow anyone to operate or service the machine or its accessories without proper training and instructions. Never allow minors to operate any equipment.
3. Learn the proper use of the machine, the locations and purpose of all the controls before you operate the equipment. Working with unfamiliar equipment can lead to accidents.
4. Wear all the necessary protective clothing and personal safety devises to protect your head, eyes, ears, hands and feet. Operate the machine only in daylight or in good artificial light.
5. Inspect the area where the equipment will be used. Pick up all debris you can find before operating. Beware of overhead obstructions and underground obstacles. Stay alert for hidden hazards.
6. Never operate equipment that is not in perfect working order or without decals, guards, shields, or other protective devices in place.
7. **Never disconnect or bypass any switch.**
8. Carbon monoxide in the exhaust fumes can be fatal when inhaled, never operate a machine without proper ventilation.
9. Fuel is highly flammable, handle with care.
10. Keep engine clean. Allow the engine to cool before storing and always remove the ignition key.
11. After engine has started machine must not move. If movement is evident, the neutral mechanism is not adjusted correctly. Shut engine off and readjust so the machine does not move when in neutral position.
12. Never use your hands to search for oil leaks. Hydraulic fluid under pressure can penetrate the skin and cause serious injury.
13. This machine demands your attention. To prevent loss of control or tipping of the vehicle:
    A. Use extra caution in backing up the vehicle. Make sure area is clear. Do not stop or start suddenly on any slope. Avoid driving sideways on hills as much as possible.
    B. Reduce speed on slopes and in sharp turns. Use caution when changing directions on slopes.
    C. Stay alert for holes in the terrain and other hidden hazards.
14. Before leaving operator's position for any reason:
    A. Disengage all drives.
    B. Shut engine off and remove the ignition key.
15. Keep hands, feet and clothing away from moving parts. Wait for all movement to stop before you clean, adjust or service the machine.
16. Keep the area of operation clear of all bystanders.
17. Never carry passengers.
18. Stop engine before making repairs/adjustments or to check or add oil to the crankcase.
19. **Use parts and materials supplied by SMITHCO only. Do not modify any function or part.**

These machines are intended for professional maintenance on flat grass athletic fields. Other use will void the warranty.

SPECIFICATIONS

TOPLINER II SPECIFICATIONS

MODEL 44-701

Weights and Measurements

Length	82" overall (100" with boom) (208 cm overall & 254 cm with boom)
Width	44" overall (without boom) (111 cm)
Ground Clearance	7" (18 cm)
Weight	510 lbs.; crated - 870 lbs.; (231 kg; crated - 395 kg)

Tires
2 front wheels - 16 x 6.50 x 8; 2 ply; 2 rear wheels - 20 x 10 x 8; 2 ply

Wheel Base
53" (Turning Radius 13')

Drive
Hydrostatic drive; Eaton 851 transaxle

Controls
Hand lever for forward/reverse and speed; electric clutch for pump on/off; electric foot paint control switch; all other controls on dashboard

Brakes
Dynamic braking, through hydrostatic transaxle

Seat
One piece; back support; comfortable; adjustable

Body
Heavy, strong, steel

Ground Speed
0-6 mph (0 to 11 khp)

Pump
Vanton Flex-I-Liner; polypropylene body with rubber liner

Engine
9 hp Kawasaki gasoline engine; electric start

Steering
Chain and sprocket system

Paint Tank
50 gallons; polyurethane; with constant paint agitation

Two Spray Boxes
Front-mounted and side-mounted, both with electric lifts; paint line widths 2" to 5"; easy width adjustment.

Spray Nozzles
Two TeeJet 8004 EUS; stainless steel; in each spray box water based paint only; easily replaceable

Line Guide
Line-up guide rod; extends forward to guide operator when painting lines

ACCESSORIES

Side Line Boom
Model 49-028 – 3 ft wide; with 3 nozzles; for side line surface painting

Hose and Gun Kit
Model 49-027 – pistol-grip spray gun with extension pipe and 12 ft. hose; for painting numbers and designs; and for weed control spraying

Hash Mark Box
Model 49-029 – designed for marking yard lines on football fields

MIXING INSTRUCTIONS

NOTE: The operator should familiarize himself with the procedures below before starting the unit. The Topliner V should be run in an open area using water only until the operator is fully familiar with its operation.

MIXING INSTRUCTIONS FOR MARKING PAINT. USE TOP QUALITY WATER-BASE LATEX ATHLETIC FIELD PAINT ONLY. **INFERIOR PAINT VOIDS SMITHCO WARRANTY.**

A. Never use mixed paint without straining.
B. Completely follow mixing instructions on painting container.
C. The depth of the color of the line will be determined by the percentage of water added to the paint. Because of the variation in paints, the user must determine the consistency for himself. In most cases we recommend the mix should be at least two parts water to one part paint. NEVER use more than 50% paint.
D. Use spraying nozzle TeeJet 8004EVS tip. This tip has been tested and works the best with the SMITHCO pumping system.
E. Fill tank with desired amount of water while pump is running.
F. Be sure to strain paint before pouring it into the tank
G. Pour strained paint into tank slowly to properly mix.
H. Always drain and flush the entire paint system with water after each use for at least 5 minutes or until water runs clear.
I. The nozzle tips should be disassembled for cleaning.
J. Do not leave paint mixture in tank overnight.

NOTE: DO NOT OPERATE PUMP WITHOUT LIQUID PASSING THROUGH. IF SO, PUMP WARRANTY IS VOIDED.

ATHLETIC FIELD PAINTING POINTERS

A. To achieve the best results, and minimize turf damage, use an athletic field marking paint. Choose water based, non-toxic, non-phytotoxic paint.
B. Mix paint thoroughly with the proper amounts of water to maintain uniform coverage and color throughout the job. Dilution ratios will vary; changes are usually determined from experience. When using TOP QUAILTY SPORTS TURF PAINT, for new lines, a lower dilution ratio will be more effective of 2 parts water to 1 part paint. For relining a higher percentage of water may be suitable.
C. Preset the lines to be painted using a strong nylon string to paint the lines, numbers and hash marks in a quick, efficient way. In many typical applications, painted lines on athletic fields do not usually wear off, but are removed by mowing. Turf Growth Regulators (TGR) or Plant Growth Regulators (PGR) can be used to reduce turf growth. TGR's, such as Primo, added to paint, can reduce turf growth, and frequency of relining.
D. Check with your local environmental and hazardous waste office, for proper disposal of paint waste material, particularly material that flows directly into a sewer or storm drain.

SETTING LINE WIDTH

1. The line width desired can be set by loosening the thumb screw on spray box and moving the spray tips up and down and adjusting boom flap as desired.
2. Locate the line guide squarely on the line intended. The line guide can be adjusted by sliding the rod to the desired position and then locking with the thumb screws provided.

MAINTENANCE INSTRUCTIONS

1. After painting each field, flush spray pump and tips with fresh water. This will prevent paint from drying in system.

   NOTE: IF MACHINE IS TO BE LEFT MORE THAN 1 HOUR, SYSTEM SHOULD BE FLUSHED.

2. After each day's use, drain tank of all paint. Flush system at least 5 minutes with fresh water or until water runs clear
   A. Remove all tips from booms. These can be cleaned with soapy water and a toothbrush.
   B. Rinse paint from tank, then fill tank with clean water.
   C. Set selector valve, on left side of machine, to flush position. Turn on pump.
   D. Open tip pressure adjuster valve, turn on paint switch. Flush system at least 5 minutes.
   E. Open drain valve to allow water to drain from tank. After draining tank completely, rinse tank of any remaining paint. Leave about 3" of water in tank. (NOTE: This will help prevent paint from drying in system.)
3. Lubricate the following:
   A. Steering shaft bearings. (Located on pg. , Steering and Tank Drawing,)
   B. Hub bearings (Front). (Located on pg. , 44-701 Drive Train Drawing, #)
   C. Boom arms (Both). (Located on pg. , Main Boom Assembly, #)
   D. Front axles (Left and Right). (Located on pg. , Drive Train Drawing, #)
4. See engine manual for maintenance instructions on engine.
5. Pump (Use 3:1 Oil) Oil daily.
6. When storing unit after the painting season, the battery should be disconnected. NOTE: THE UNIT MUST BE DRAINED OF ALL WATER FOR WINTER STORAGE.

   Unit should be thoroughly cleaned and flushed. Tips should be cleaned to be ready for next painting season.

PAINTING INSTRUCTIONS

A. SMITHCO recommends top quality water base latex athletic field paint. **NOTE: INFERIOR PAINT VOIDS WARRANTY.**
B. SMITHCO recommends mixing paint no more than 1 part paint to 2 parts water. A higher percentage of paint may cause the system to clog.
C. Must strain paint while filling tank.
D. Set speed control lever to neutral position. **NOTE: IF UNIT DOES NOT START, PLEASE CHECK TO ENSURE NEUTRAL IS SET.**
E. Turn key switch to start unit, allow unit to warm up for 3 min.
F. Select front or side boom by using selector valve on side of unit.
G. Engage pump switch to "ON" position to begin agitation.
H. Lower desired boom by using one of the switches located on the left side of the steering column.
I. Do not paint until unit is moving in the desired line of travel.
J. Depress foot switch to start or stop painting.
K. Increase and decrease paint flow to desired pressure by using the valve on left hand side. ⑥
L. For more detailed information read the Owner's Manual.

CLEANING INSTRUCTIONS FOR # 44-701 TOPLINER V

A. Open drain valve, located at bottom of paint tank, draining remaining paint into clean sealable container.
B. Flush paint tank with fresh water, with drain valve open, until all paint residue is out of the tank.
C. Close drain valve and fill paint tank with clean water.
D. Turn selector valve to flush position.
E. Turn on pump switch.
F. Increase tip pressure to a maximum of 20 psi.
G. Turn on paint switch; flush tips until water flows clear.
H. Decrease tip pressure.
I. Turn paint switch to off. Allow pump to agitate water in paint tank.
J. Open drain valve at bottom of paint tank once again, drain water to just below agitators and then BE SURE to turn off pump. Allow tank to drain completely and close drain valve. NOTE: NEVER RUN PUMP DRY.
K. Remove spray tips from both booms; clean thoroughly with a soft bristle brush and soapy water.
L. Leave at least 5 gallons of water in tank and system after cleaning.

TROUBLESHOOTING

There are a number of variables affecting the line density if it is not satisfactory.

A. Paint may be inferior: Paint mixture may be too thick or too thin.

B. Hoses or tips may be clogged: Tips must be clean. System may need to be flushed, or paint may need to be restrained.

C. Nozzle tips may be worn out: Replace with TeeJet 8004EVS stainless steel.

D. Tip pressure may need adjusting: Paint pressure valve regulates tip pressure. Increasing pressure, increases paint applied; decreasing pressure decreases paint applied. Keep in mind; the spray tips have a recommended maximum pressure of 20 psi for best results.

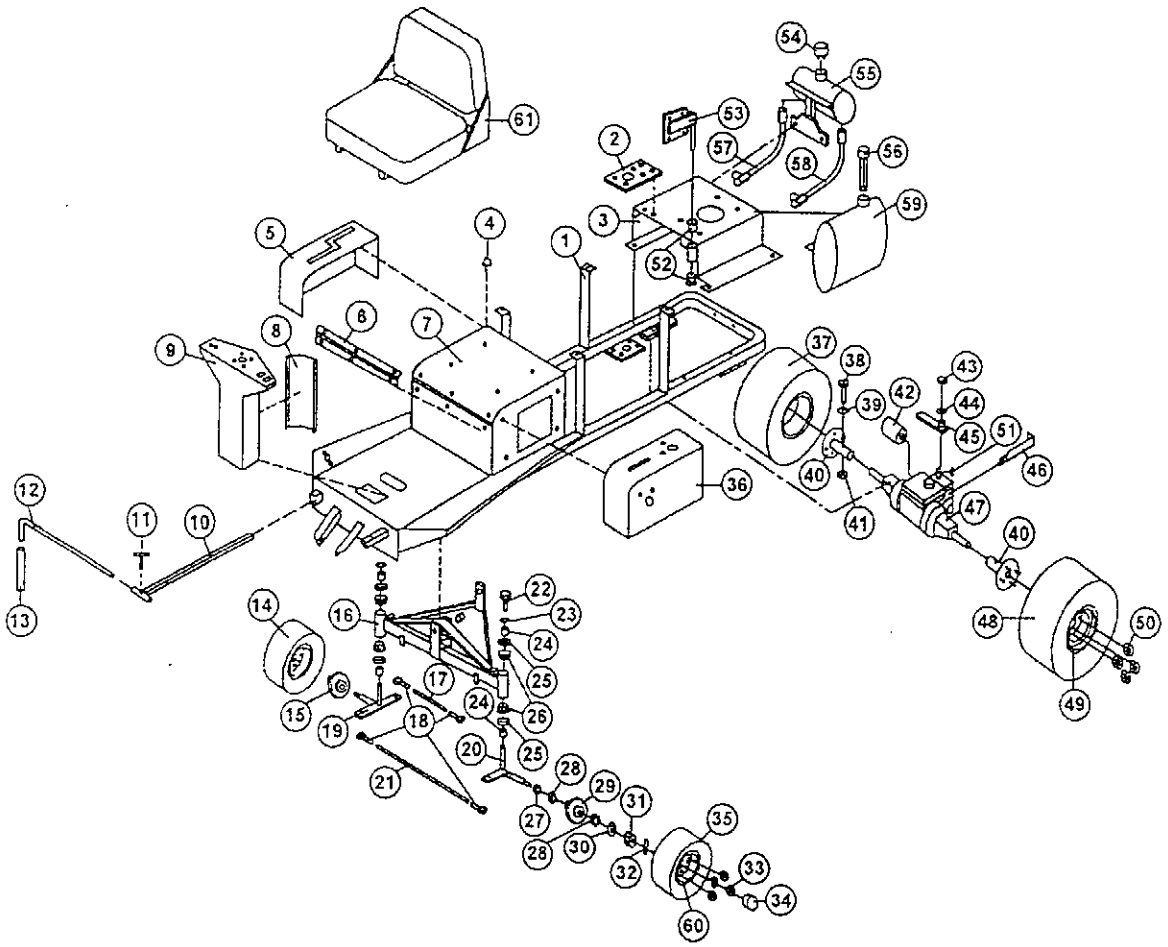
E. Reducing speed increases paint applied; increasing speed decreases paint applied.

F. Proper lining color should be ascertained in the field, because of variations in marking paint and the percentage of water added. Recommended mixture is 2 parts water to 1 part paint. Never use more than 50% paint.

G. Unit will not start if speed control lever is not in neutral.

If you have any further questions, please contact our **SMITHCO** Technical Consultant at 1-888-422-5173.

44-701 MAIN FRAME DRAWING



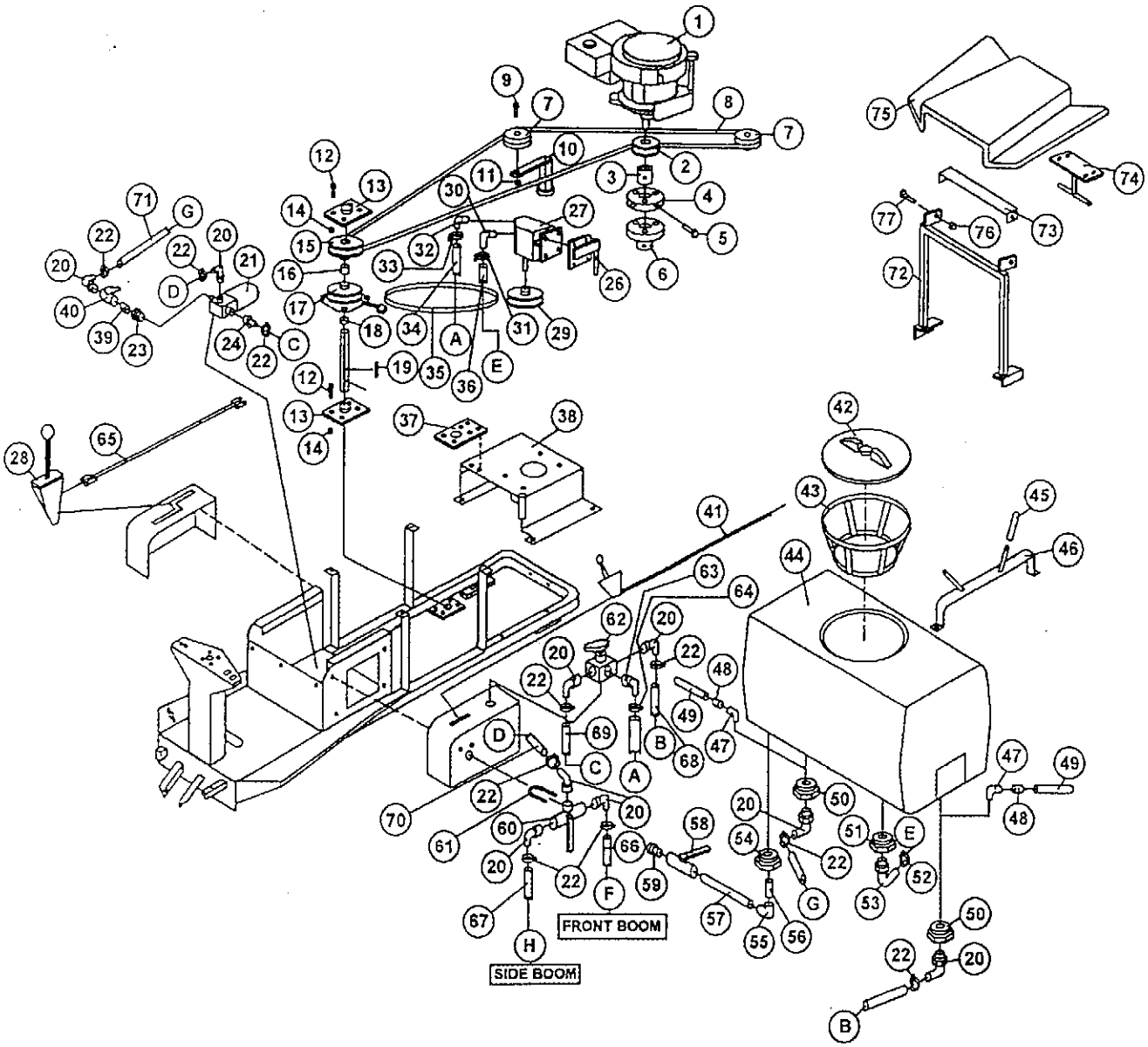
44-701 MAIN FRAME PARTS LIST

REF.#	PART#	DESCRIPTION	QTY.
1	44-705	Frame	1
2	44-742	Clutch Plate	1
3	44-732	Engine Base	1
4	41-143	Rubber Mount	2
5	44-736	Shifter Box	1
6	44-744	Hinge	1
7	44-743	Seat Plate	1
8	44-730	Column Cover	1
9	44-731	Steering Column	1
10	40-189	Line Guide Arm	1
11	602-640	3/16" x 1 ¼" T-Bolt	1
12	40-151	Line Guide Rod	1
13	8802-8	Clear Vinyl Hose ½" x 8"	1
14	2774	Tire & Wheel	2
15	2027	Hub Complete	2
16	44-733	Front Axle Crossmember	1
17	44-725	Tie Rod	1
18	713-806	Ball Joint	4
19	44-735	Front Axle Right	1
20	44-734	Front Axle Left	1
21	44-723	Steering Rod	1
22	400-025	3/8" x 1" Fine Bolt	2
23	1094	Riser Washer	2
24	730-052	Spacer ¾" x ½"	4
25	41-222	Grease Seal	4
26	41-218	Bearing	4
27	709-171	Seal	2
28	2028	Tapered Bearing	2
29	2027H	Hub	2
30	2013	Spindle Washer	2
31	709-126	Spindle Nut	2
32	709-143	Cotter Pin	2
33	1187	Lug Nut	8
34	2024	Grease Cap	2
35	2780	Tire 16 - 6.50 – 8	2
36	44-737	Throttle Control Box	1
37	44-745	Wheel & Tire	2
38	400-092	5/16" x 2 ½" Bolt	2
39	400-202	5/16" Washer	2
40	41-196	Hub	2
41	400-109	5/16" Locknut	2
42	40-615	Oil Filter	2

44-701 MAIN FRAME PARTS LIST (Continued)

REF.#	PART#	DESCRIPTION	QTY.
43	400-116	3/8" Locknut	1
44	400-202	5/16" Washer	1
45	44-721	Transaxle Shift Bar	1
46	44-740	Support Arm	1
47	40-610	Transaxle	1
48	44-746	Tire	2
49	44-747	Wheel	2
50	1187	Lug Nut	8
51	720-069	Woodruf Key 1/8" x ½"	1
52	2110	Pivot Post Bearing	2
53	44-741	Pump Bracket	1
54	41-135	Vented Oil Cap	1
55	41-313	Oil Tank	1
56	41-104	Gas Cap	1
57	41-327	½" Hydraulic Hose 16" – Right	1
58	41-325	½" Hydraulic Hose 13 ½" – Left	1
59	41-107	Gas Tank	1
60	2775	Front Wheel	1
61	832-123	Low-Back, SMITHCO Seat	1

44-701 PLUMBING DRAWING



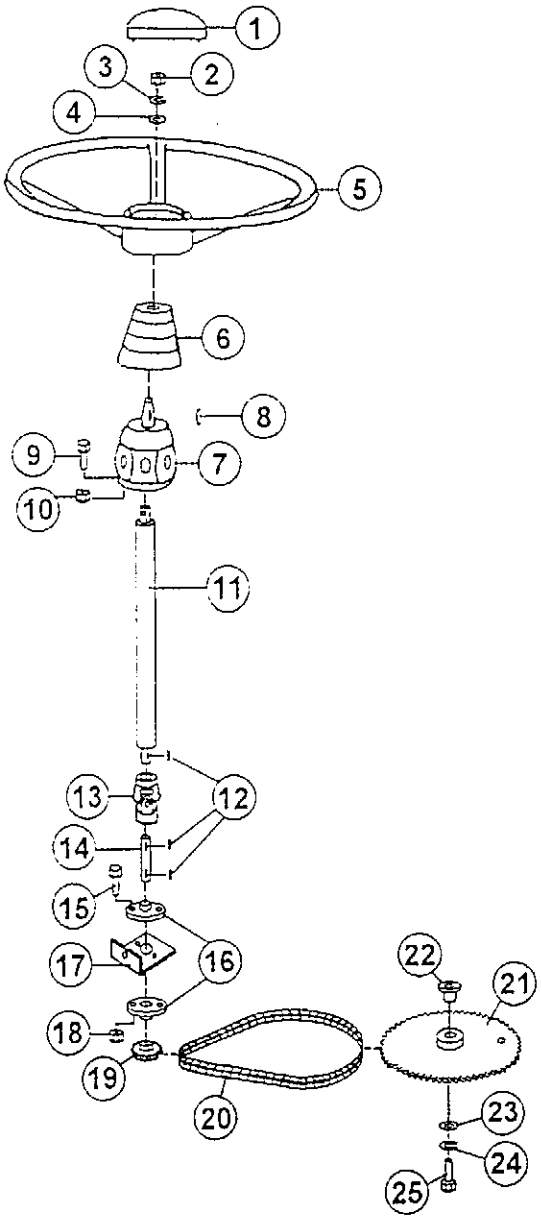
44-701 PLUMBING PARTS LIST

REF.#	PART#	DESCRIPTION	QTY.
1	709-463-1	Engine w/Charging Coil	1
2	709-212	BS30 x 1 Pulley	1
3	740-020	1" Hub	1
4	740-022	Rubber Element	1
5		Bolts come only with 740-022	6
6	740-021-17	17 mm Hub	1
7	44-716	5000 RPM Idler	2
8	44-714	Double Sided Belt	1
9		Bolt comes with 44-728 Tensioner	1
10	44-728	Tensioner w/Hardware	1
11		Nut comes with 44-728 Tensioner	1
12	400-015	3/8" x 1 ½" Bolt	8
13	720-002	4-Bolt Flange Bearing	2
14	400-116	3/8" Locknut	8
15	44-712	BK60 x 1 Pulley	1
16	44-754	Spacer 1" x 3/8"	1
17	44-711	Electric Clutch	1
18	44-755	Spacer 1" x 1"	1
19	1517	¼" Key	3
20	709-339	½" Poly Barbed Elbow	9
21	709-291-1	Directo Valve Bank of 1	1
22	709-312	½" Hose Clamp	12
23	709-380	¾" x ½" Nylon Bushing	1
24	709-378	¾" NPT x ½" Barb Poly	1
25	44-739	Pulley Shaft	1
26	44-741	Pump Mount	1
27	44-710	Pump	1
28	44-718	Shift Lever	1
29	44-713	BK50 x ½" Pulley	1
30	709-342	1" Poly Barbed Elbow	1
31	709-309	1" Hose Clamp	1
32	709-341	¾" Barbed Elbow	1
33	709-314	¾" Hose Clamp	1
34	645	¾" PVC Hose	53"
35	709-624	Belt 3290	1
36	648	1" Suction Hose	18"
37	44-742	Clutch Mounting Plate	1
38	44-732	Engine Base	1
39	709-344	½" Poly Close Nipple	1
40	41-114	½" Brass Valve	1
41	44-715	Throttle Cable	1
42	160-195	10" Screw In Lid	1
43	700-026	10" Strainer Basket	1

44-701 PLUMBING PARTS LIST (Continued)

REF.#	PART#	DESCRIPTION	QTY.
44	760-159	50 Gal. Poly Tank	1
45	40-038	Round Grip	4
46	602-646	Tank Strap	2
47	709-332	½" Poly Street Elbow	2
48	709-344	½" Close Poly Nipple	2
49	702-144	Agitator	2
50	160-206	½" DT Fitting	2
51	160-204	1" Fitting	1
52	709-309	1" Hose Clamp	1
53	709-342	1" Poly Barbed Elbow	1
54	160-207	½" Fitting	1
55	500-401	½" Elbow 90° Gal.	1
56	500-507	½" x 2" Nipple Gal.	1
57	500-556	½" x 12" Nipple Gal.	1
58	709-257	½" Ball Valve	1
59	707-050	½" NPT x ¾" GHT Adapter	1
60	41-307	2 Way Brass Valve	1
61	610-229	U-Bolt	1
62	44-717	3-Way Plastic Valve	1
63	709-340	½" NPT x ¾" Poly Barb Elbow	1
64	709-314	¾" Hose Clamp	1
65	44-719	Shift Cable	1
66	642	½" PVC Hose	53"
67	642	½" PVC Hose	50"
68	642	½" PVC Hose	26"
69	642	½" PVC Hose	19"
70	642	½" PVC Hose	24"
71	642	½" PVC Hose	23"
72	44-752	Cover Mounting Frame	1
73	44-758	Hinge Bracket	1
74	44-753	Cover Latch	1
75	44-751	Engine Cover	1
76	400-109	5/16" Locknut	2
77	400-002	5/16" x 1" Bolt	2

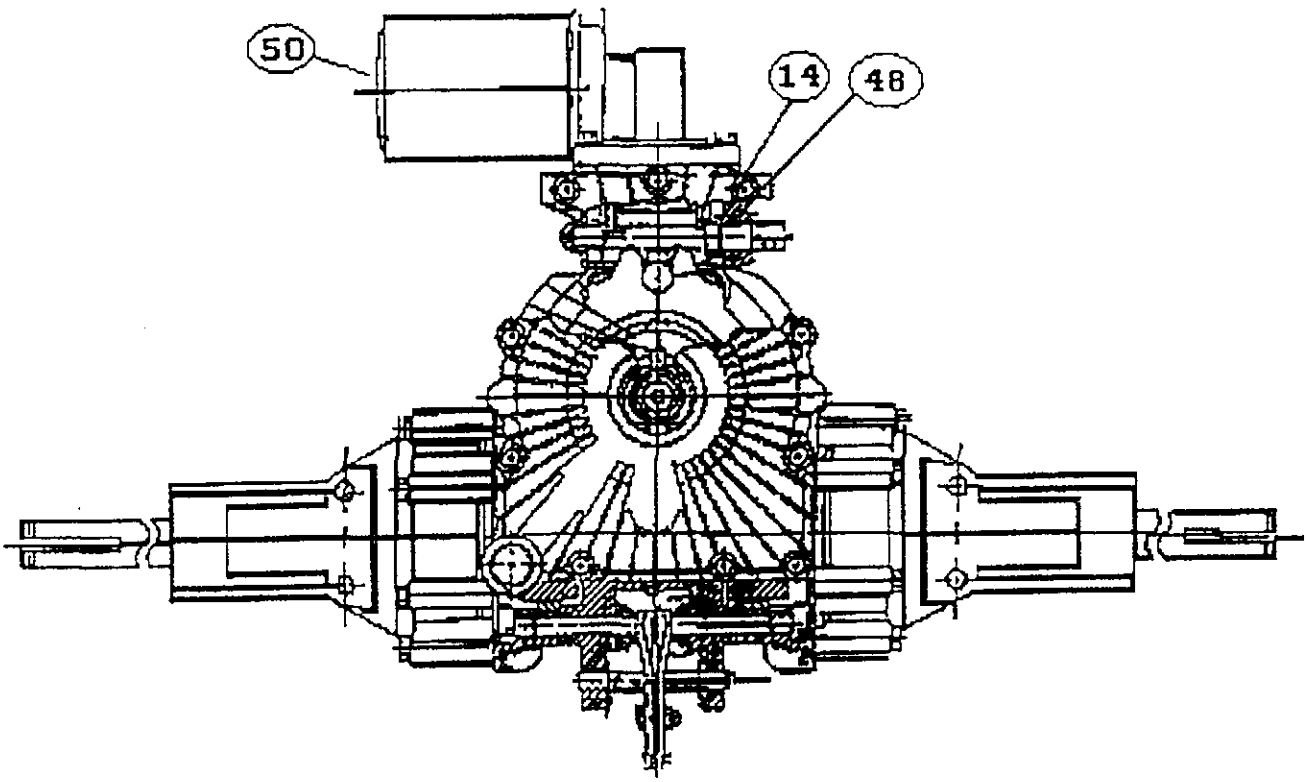
STEERING DRAWING



STEERING PARTS LIST

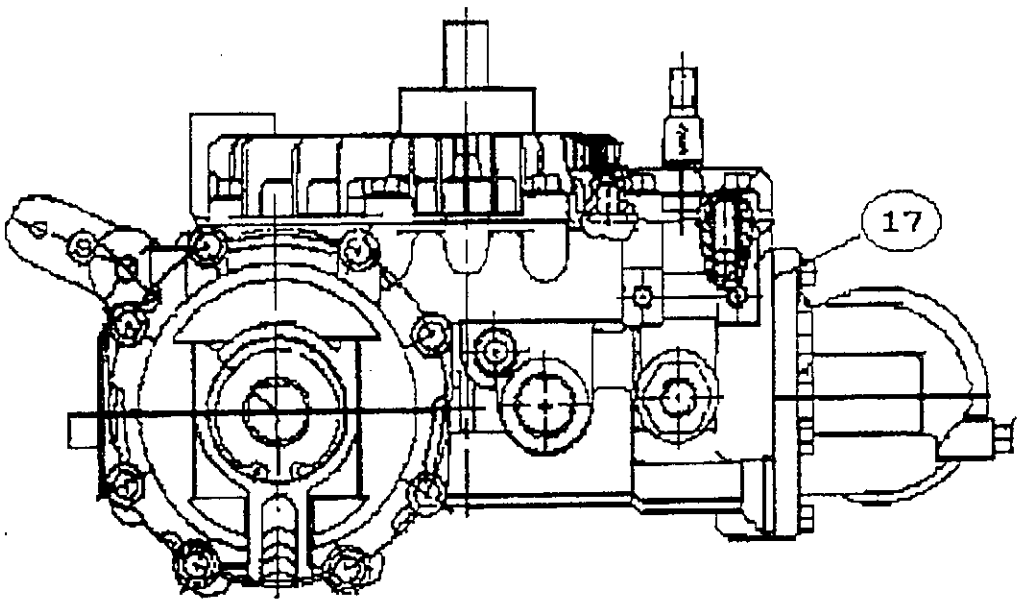
REF.#	PART#	DESCRIPTION	QTY.
1	730-046-1	Cap	1
2	400-122	5/8" Nut	1
3	400-211	5/8" Lock Washer	1
4	40-166	Machine Bushing 5/8" x 14GA	1
5	730-046	Steering Wheel	1
6	832-023	Black Boot	1
7	832-022	Tilt Steering Mechanism	1
8	740-023	Woodruf Key 3/16" x ¾"	1
9	400-002	5/16" x 1" Bolt	4
10	400-109	5/16" Locknut	4
11	44-720	Steering Shaft Upper	1
12	1088	3/16" x 1" Key	3
13	41-120	U-Joint ¾" x ¾"	1
14	41-193	Steering Shaft Lower	1
15	400-006	5/16" x 2" Bolt	2
16	1036	Jackshaft Bearing	2
17	41-194	Chain Adjuster Bracket	1
18	400-109	5/16" Locknut	2
19	1075	#40 Jackshaft Sprocket 11T	1
20	41-251	Chain #40 x 108 Pitch w/Offset Link	1
21	41-198	Steering Sprocket	1
22	2110	Pivot Post Bearing	1
23	400-203	3/8" Flat Washer	1
24	400-209	3/8" Lock Washer	1
25	400-025	3/8" x 1" Bolt	1

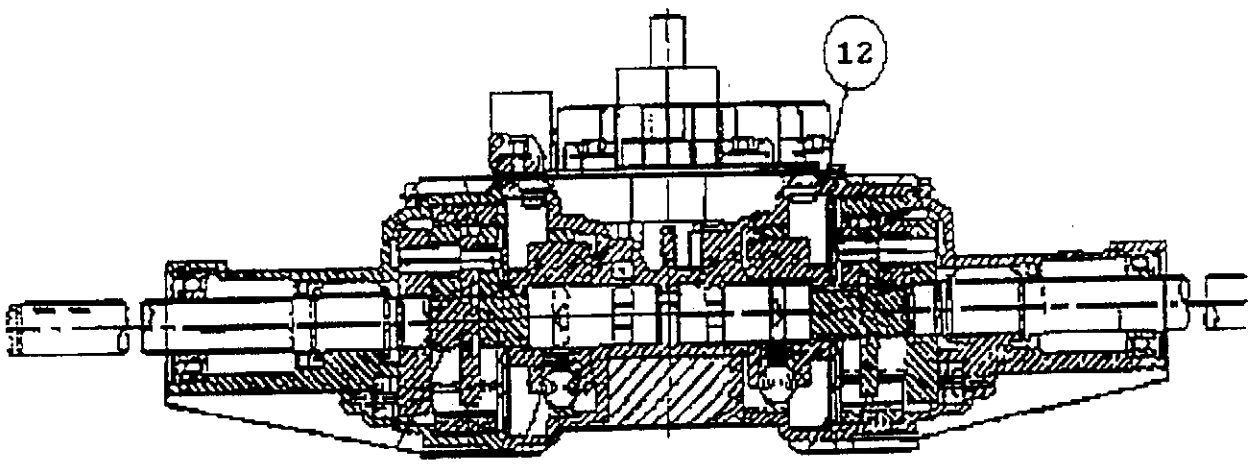
40-610 TRANSAXLE (Drawing I)



REF.#	PART#	DESCRIPTION	QTY.
14	40-616	O-Ring	1
48	40-417	Tube Fitting O-Ring	1
50	40-615	Oil Filter	1

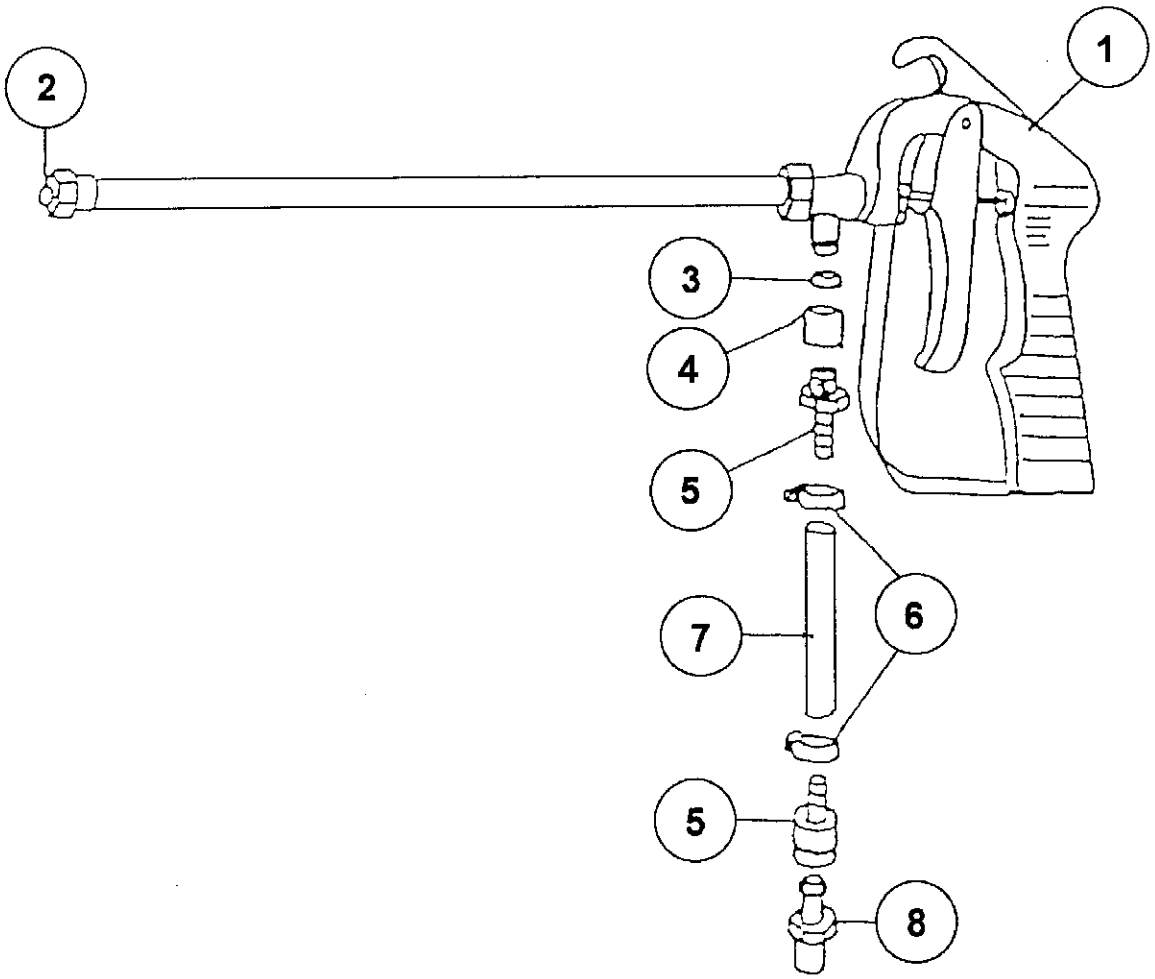
40-610 TRANSAXLE (Drawing II)





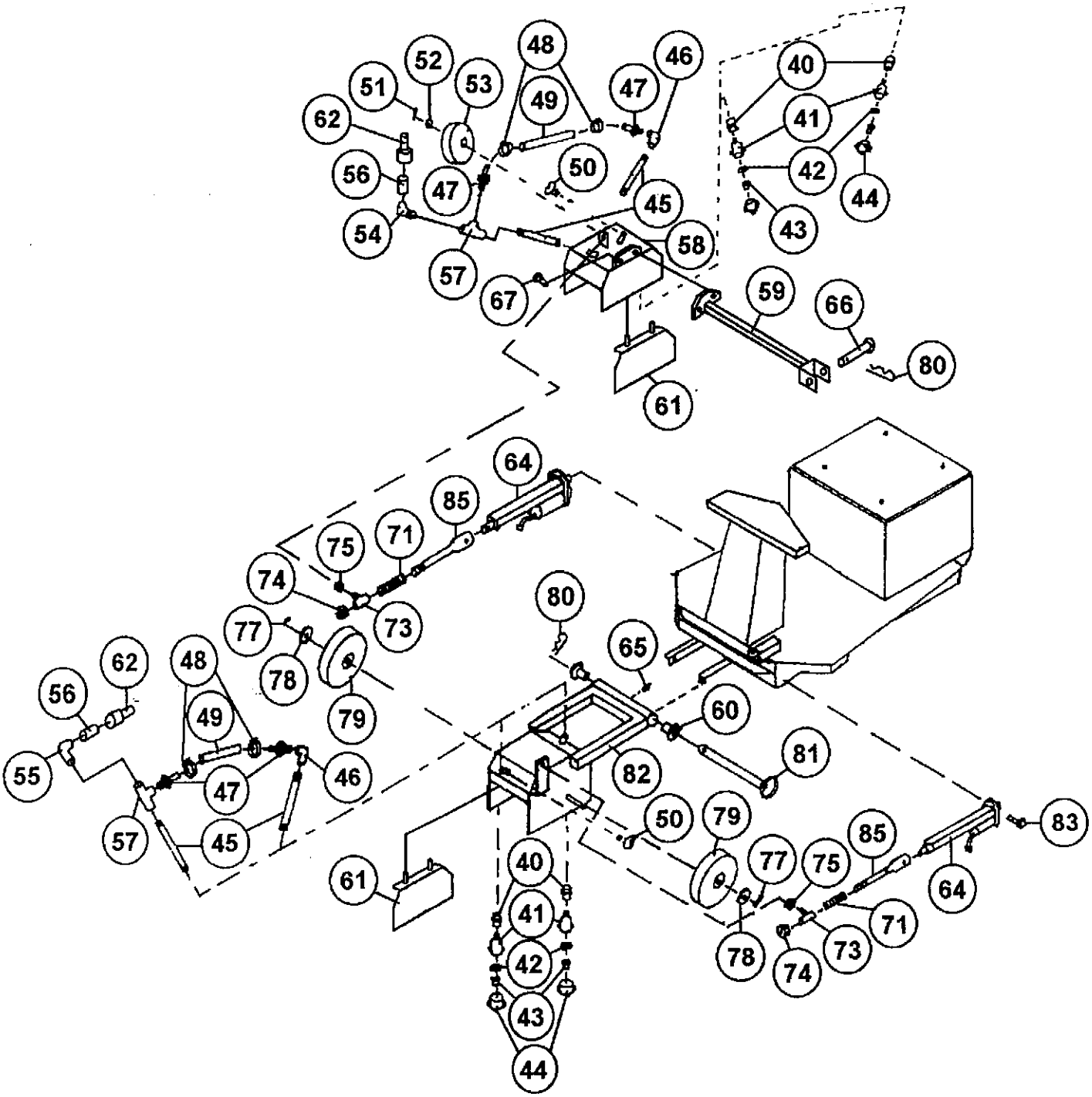
REF.#	PART#	DESCRIPTION	QTY.
17	40-618	Gasket, Filter Base	1
12	40-619	Cover Gasket	1

49-027 GUN & HOSE KIT



REF.#	PART#	DESCRIPTION	QTY.
1	4085	Spray Gun	1
2	709-053-6503	Nozzle Tip	1
3	19-725	Nylon Gasket	1
4	707-040	Adapter	1
5	19-658	¼" Hose Barb	2
6	18-003	Hose Clamp	2
7	8800-12	¼" Clear Hose (12')	1
8	44-008	Quick Coupler Plug	1

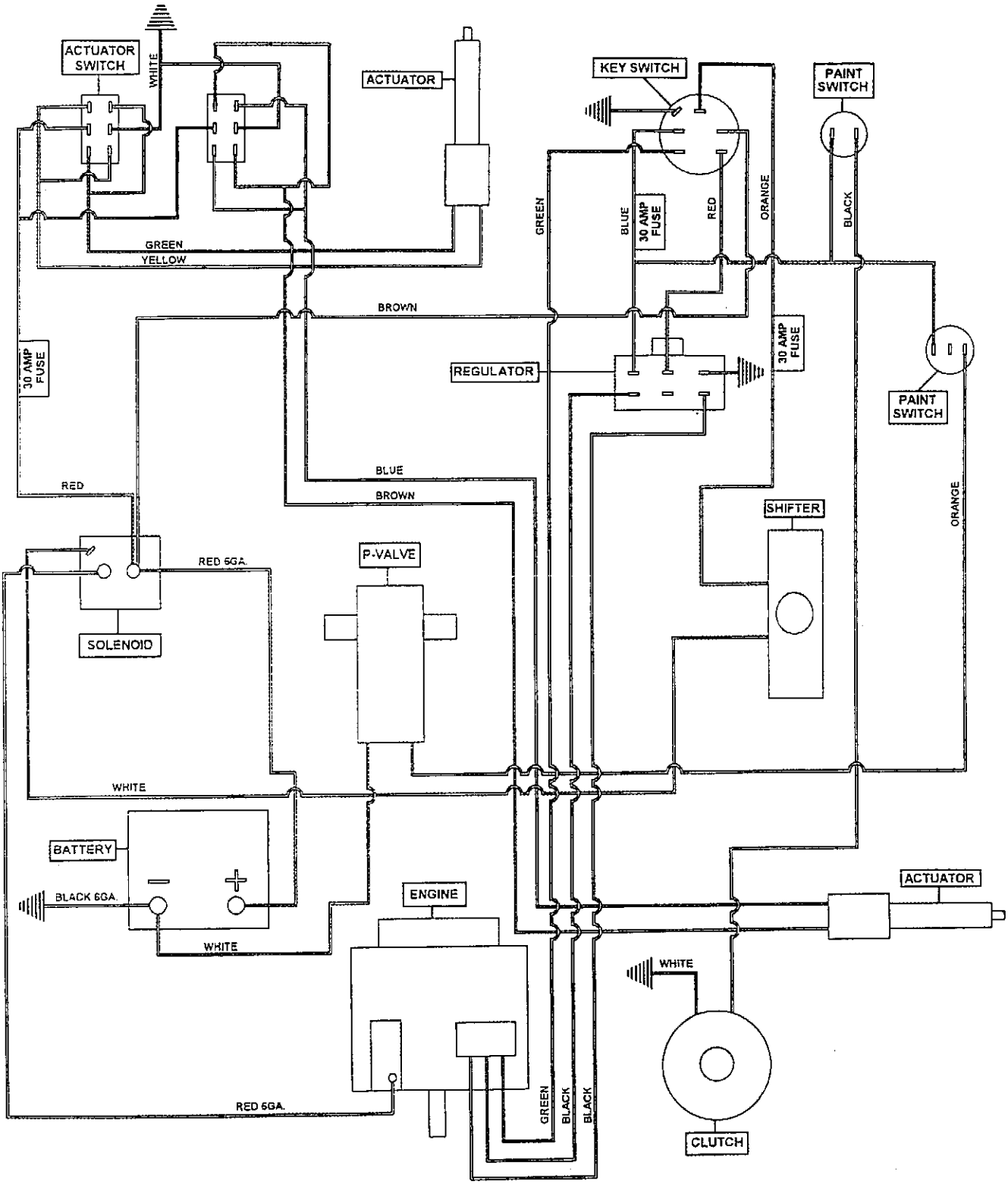
BOOM DRAWING



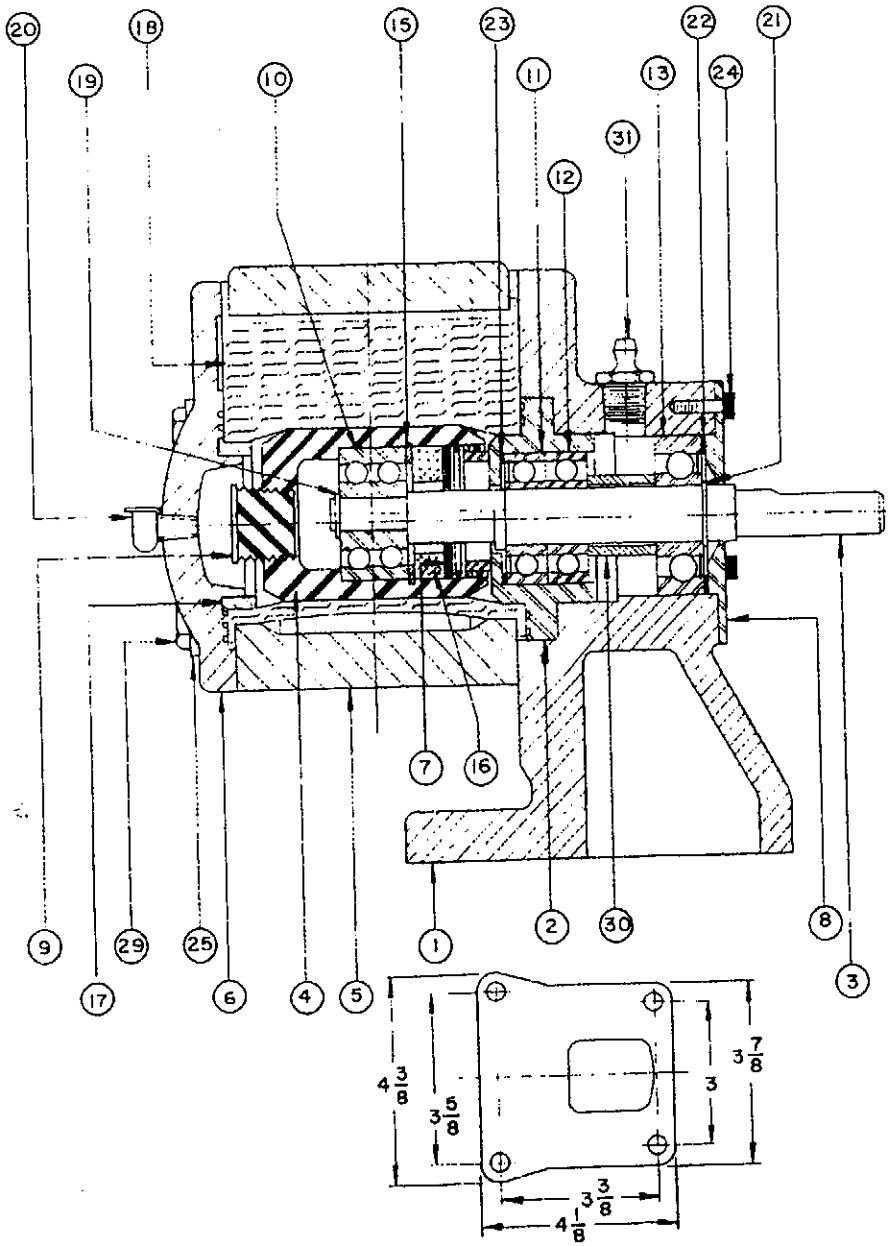
BOOM PARTS LIST

REF.#	PART#	DESCRIPTION	QTY.
40	500-314	¼" Coupling	4
41	41-309	Dripless Nozzle Body	4
42	709-516	Gasket	4
43	709-053-8004EVS	Nozzle Tip	4
44	709-514	Orange Cap	4
45	500-243	¼" x 4" Nipple Gal.	4
46	500-400	¼" Gal. Elbow	2
47	19-658	¼" Hose Barb	4
48	18-003	¼" Hose Clamp	4
49	638	¼" Black Hose	10"
50	400-060	5/16" x 1" Thumb Screw	4
51	41-168	1/8" x 1" Cotter Pin	1
52	40-128-1	½" ID x 7/8" OD Machine Bushing	3
53	49-017	8" Caster Wheel	1
54	18-007	¼" Brass 90° St Elbow	1
55	18-037	¼" 45° Brass St Elbow	1
56	18-011	¼" Close Nipple	2
57	18-012	¼" Brass Tee	2
58	44-727	Side Mount Boom	1
59	44-756	Side Boom Lift Arm	1
60	2110	Pivot Post Bearing	2
61	44-305-1	Boom Flapper	4
62	44-008	Plug	2
64	730-160	12 V. Actuator	2
65	709-382	¼" Grease Zerk	1
66	44-757	Side Boom Mounting Pin	1
71	19-674	Spring	2
73	41-255	Actuator Connecting Rod	2
74	400-112	½" Locknut	2
75	400-116	3/8" Locknut	2
77	40-168	1/8" x 1" Cotter Pin	2
78	40-128-1	½" ID x 7/8" OD Machine Bushing	6
79	49-017	8" Caster Wheel	2
80	2050	Snap Pin	2
81	41-243-1	Mounting Pin	1
82	41-310-1	Front Boom	1
85	41-254	Actuator Adjustment Rod	2

44-701 WIRING DIAGRAM



44-710 PUMP DRAWING



44-710 VANTON PUMP PARTS LIST

REF.#	PART#	DESCRIPTION	QTY.
1	44-710-1	Pedestal	1
2	44-710-2	Bearing Sleeve	1
3	44-710-3	Shaft	1
4	44-710-4	Rotor	1
5	44-710-5	Body Block	1
6	44-710-6	Cover Plate (Item 28 Included)	1
7	44-710-7	Bearing Guard Spacer	1
8	44-710-8	Bearing Cover	1
9	44-710-9	½" NPT Plug	1
10	44-710-10	Rotor Bearing	1
11	44-710-11	First Outboard Bearing	1
12	44-710-12	Second Outboard Bearing	1
13	44-710-13	Third Outboard Bearing	1
15	44-710-14	Rotor Bearing Retaining Ring	1
16	44-710-15	Bearing Guard Extension	1
17	44-710-16	Expansion Ring	1
18	44-710-17	Flex-I-Liner	1
19	44-710-18	Rotor Retaining Ring	1
20	44-710-19	Oil Cup	1
21	44-710-20	Shaft Retaining Ring	1
22	44-710-21	Inner Shim	3
23	44-710-22	Outer Shim	3
24	44-710-25	10 – 32 x 3/8" SOC. HD. Cap Screw	4
25	400-202	5/16" S.A.E. Flat Washer	4
29	400-009	5/16" – 18 NC x 4" Lg Hex. HD. Cap Scr	4
30	44-710-23	Bearing Spacer	1
31	44-710-24	Grease Fitting ¼" N.P.T.	1

MAINTENANCE INSTRUCTIONS FOR 44-710 PUMP

GENERAL AND COMPREHENSIVE MAINTENANCE
XB PUMP MODEL 60B

GENERAL

All Vanton XB pumps are assembled and fully tested at the factory and are ready for immediate use. If the pump was shipped with a motor and base plate, all that is necessary to put the pump into operation is to wire the motor. Motor alignment and rotation will be correct on leaving factory but should be checked prior to installation. The use of flexible tubing or bellows between piping and pump terminals is recommended.

If the pump is to be mounted by the user, extreme care must be taken to achieve alignment within .005" between pump and motor shafts. To accomplish this, it may be necessary to "shim up" either the pump or motor because of variance in the heights of motor shafts. Before putting the pump into operation, make sure the motor rotation is in a clockwise direction for maximum performance, although reverse rotation is perfectly feasible at somewhat reduced output. Careful observance of the foregoing will assure quiet operation of the pump.

Each pump has been engineered for a specific job. If a pump is to be used for other purposes, consult the Vanton Engineering Department to determine the suitability of the materials of construction for the new application.

MAINTENANCE

The pump is equipped with a Gits type oiler which permits the occasional oiling of the flex-I-liner interior with Vanton pump oil or pure silicone oil. If the pump is used in continuous service, add a little oil once each week, less often for less severe service. This servicing is accomplished by stopping the pump, raising the spring loaded cover of the Gits type oiler and adding the oil. **CAUTION! ORGANIC OILS MUST NOT BE USED. THE ONLY RECOMMENDED OILS FOR USE WITHIN THE FLEX-I-LINER ARE VANTON PUMP OIL OR PURE SILICONE OIL.** The Vanton Pump employs relubricated type ball bearings in the pedestal. It is advisable that after approximately every 250 hours of operation the bearings be regreased using any good quality bearing grease.

GENERAL REPAIRS

Usually, the repair of a Vanton pump is an extremely simple procedure. After long use or severe service, the flex-I-liner may become worn or break. Replacement of this part restores the pump to its original performance. The steps for doing this are outlines as follows:

MAINTENANCE INSTRUCTIONS FOR 44-710 PUMP (Continued)

Refer to: Replacement Parts Drawing
Mounting Dimension Drawing

1. Obtain the following items: ½" open end wrench, or box wrench, or socket and ratchet; replacement flex-I-liner and Vanton oil.
2. Remove four bolts (Item 29) using the ½" wrench or socket.
3. Remove cover plate (Item 6).
4. Remove expansion ring from the now exposed flex-I-liner (Item 17).
5. Grasp the body block (Item 8) and pull it away from the pedestal (Item 1).
6. Remove the worn flex-I-liner from within the body block.
7. Install new flex-I-liner; clean all chemicals from exposed parts of pump.
8. Apply a liberal amount of Vanton pump oil to the inside of the flex-I-liner. Spread this oil over the entire interior and to the very edge.
9. Push the body block back on the pedestal. Rotate the shaft while doing this. Shaft should be rotated at the same time that pressure is being applied to the block to push it "home." This will allow the flex-I-liner to seat over the pilot of the bearing sleeve. It is suggested that the shaft be left in top dead center position once the block has been forced "home". This position usually occurs when the milled flat of the shaft faces upward or shaft assumes T.D.C. position on its own due to the force applied by the flex-I-liner. If the flex-I-liner is properly seated, the block will remain close to the pedestal when hands are removed from the block; if improperly seated, the block will spring back from the pedestal. **Failure to have flex-I-liner properly seated prior to taking the next step will result in flex-I-liner crimpage and improper pump performance.**
10. "Snap" expansion ring into flex-I-liner.
11. Replace cover plate.
12. Replace the four bolts and tighten each a little at a time like one tightens a tire rim. Rotate shaft a number of times before bolts are drawn tight. Do not over tighten; 20 ft. lbs. of torque is adequate.

The pump is now ready for operation. Usually the foregoing is all that will ever be required in maintenance because of built-in protection features of the XB series pumps.

COMPREHENSIVE

Under ordinary circumstances, a Vanton pump is repaired in a matter of minutes at the actual place of use by a simple replacement of the flex-I-liner. Under extremely severe service conditions were the flex-I-liner was not promptly replaced thereby allowing fluids to seep to and remain in contact with the steel and stainless steel working parts a sufficient time to damage them, a more extensive repair procedure is required. However, this type of repair can be done quickly at the Vanton factory or by the user, following the simple instructions herewith offered.

MAINTENANCE INSTRUCTIONS FOR 44-710 PUMP (Continued)

The following tools are required:

1. #2 and #3 Waldes pliers (for installing and removing retainer rings obtainable from Vanton Pump & Equipment Corp.)
2. Arbor press (Framco size 2 or 3) or a suitable substitute.
3. 3/8" and 5/32" Allen wrenches
4. 5/8" and 3/8" O.D. brass rods
5. Bushing 1 5/8" O.D. x 3" long with 1" – 1 ¼" I.D. hole

Items numbered appear on Replacement Parts Drawing XB-60B unless stated otherwise.

1. Remove bolts, cover plate, expansion ring, and body block in manner previously described under "General Maintenance".
2. Remove 3 socket head cap screws (Item 24) at the rear of pump with 5/32" Allen wrench. Remove bearing cover plate (Item 8).
3. Place pedestal in arbor press (or suitable substitute) with rotor side down and shaft vertical (Item 3). It will be necessary to "block up" one side of the pedestal in order to maintain the shaft in a vertical position.
4. Take the bushing previously described and place it on the periphery of the exposed ball bearing and over the shaft (Item 3).
5. Allow drive shaft of arbor press to engage the bushing and press downward. The entire sub-assembly consisting of the three ball bearings, bearing spacer, bearing sleeve, rotor, plastic plug, bearing guard, bearing guard extension and bearing guard spacer will come out of the pedestal as a simple integral unit. The pedestal, except for two groove pins, will at this point be completely free of accessories. The extracted sub-assembly can now be disassembled completely by following these steps:
   a. Remove plastic plug (Item 9).
   b. Using #2 Waldes plier, remove retaining ring (Item 19).
   c. Using #2 Walddes plier remove shaft retaining ring (Item 21).
   d. The sub-assembly should now be returned to the arbor press and supported against the serrated face of the bearing sleeve (Item 2) with the rotor (Item 4) once again in a downward position. The shaft (Item 3) can then be pressed out of the three ball bearings (Item 11, 12 and 13).
   e. The shaft and rotor can be disassembled from each other by supporting the rotor in the arbor press and, using the 3/8" brass rod, pressing the shaft out of the ball bearing (Item 10). The shaft is now completely free of accessories.
6. The rotor is stripped of accessories by removing manually the bearing guard, bearing guard spacer, bearing guard extension and then the bearing retaining ring, using a Waldes plier #3.
7. Press out ball bearing (Item 10) from rotor using 5/8" O.D. brass rod.
8. Bearing sleeve (Item 2) is stripped of its accessory ball bearing by merely pressing out, using 5/8" O.D. brass rod.

The pump at this point is completely disassembled. Most of the parts should be in usable condition.

Parts that require replacement at low cost should be checked carefully. These parts are:

a. All ball bearings (Items 10, 11 and 12)
b. Flex-I-Liner (Item 18)
c. Bearing guard (Item 14)

NOTE: FOR CONVENIENCE, IT IS RECOMMENDED THAT A SPARE SHAFT AND ROTOR ASSEMBLY BE STOCKED FOR INSTANT REPAIR.

Before reassembling pump, check surface of rotor O.D.; if rough, replace. Polish face of the bearing sleeve (Item 2) to a high finish as this surface may have become tarnished in use.

PEDESTAL REASSEMBLY

1. Press first and second outboard bearing (Items 11 and 12) onto shaft.
2. Insert bearing spacer (Item 30) over shaft.
3. Press third outboard bearing (Item 13) onto shaft and install retaining ring (Item 21) onto shaft, using Waldes #2 plier.
4. Place three shims (Item 23) onto bearing sleeve (Item 2) and press shaft with bearings into same.
5. Press rotor bearing (Item 10) into rotor (Item 4) and lock in place with retaining ring (Item 15) using Waldes #3 plier.
6. Insert in rotor bearing guard extension (Item 16), bearing guard spacer (Item 7) and bearing guard (Item 14) in order stated.
7. Place rotor assembly on thrust plate of arbor press-bearing guard side up. Insert eccentric end of shaft and press home with arbor press spindle and install retaining ring (Item 15).
8. Wrap ½" plug with two or three wraps of Teflon tape and inset in rotor.
9. Place pedestal (Item 1) onto arbor press with counter bore facing upward.

You now have shaft and rotor assembly.

10. Place shaft and rotor assembly into pedestal and, using 2" I.D. x 2 3/8" O.D. bored out 3 ¼" deep cup, press shaft and rotor assembly into pedestal.
11. Install bearing cover (Item 8), using socket head cap screws (Item 24) to secure in place.
12. Assemble balance of parts in manner described under General Maintenance.

FACTS TO REMEMBER

Each pump has a pump body block and flex-I-liner made from materials intended for a specific job. If the pump is shifted to another application, one or both of the above mentioned items might require a change in material. Consult the Vanton Engineering Department when in doubt.

Add **ONLY** Vanton pump oil or pure silicone oil into Alemite fitting once each month under normal operating circumstances.

When reassembling the pump body block to the pedestal, do not neglect to spin the pump shaft a few times as the block goes "home" against the pedestal; then leave shaft in top dead center position which is accomplished by having the flat of the pump shaft face upward.

Use care in handling plastic parts and fittings. It is desirable that such parts be tightened only enough to achieve a good seal and this degree of tightness required will be considerably less than that required in metallic fittings.

Important for maximum flex-I-liner life! For continuous duty, operate in lower one half of overall discharge pressure range as indicated in descriptive trade literature.

LIMITED WARRANTY

SMITHCO warrants this product to be free from defects in material and workmanship under normal use for one year from the date of purchase by the original user. (60 days if product is used for rental purposes.) All warranty claims must be handled through a SMITHCO authorized dealer or by SMITHCO, INC. All transportation charges must be paid by the purchaser.

There is no further express warranty. All implied warranties, including those of merchantability and fitness for a particular purpose, are limited to one year. (60 days if product is used for rental purposes) from date of purchase by the original user, and, to the extent permitted by law any and all implied warranties are excluded and disclaimed after the expiration of such period.

All incidental and consequential damages, including pick-up and delivery of the unit, communication, mileage charges and/or rental of a replacement unit during repair, are not covered under this warranty, or is any loss of income and/or other loss resulting from the failure of the product to function due to a warranty defect.

The following items are not covered under the SMITHCO warranty and are warranted by their respective manufacturer.

a) Engine and engine parts including starters, generators, alternator and filters.
b) Transaxle, differentials, gear boxes, and mechanical pumps.
c) Hydrostatic transmissions, hydraulic pumps and motors.
d) Batteries
e) Wheels and tires.

A copy of the warranty for the above items is furnished if necessary with each SMITHCO product.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion of limitations of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

Federal law now requires disclosure of the warranty which applies to this product prior to the sale to a consumer. Please leave this statement attached to the product and allow the buyer to remove it after purchase.

SMITHCO
Wayne, Pennsylvania 19087


SMITHCO