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MANUAL PREVIEW

Hahn

Operator's Manual

**Hi-Boy 312 Series
Sprayers**

JENSALES.COM

or Call 800-443-0625



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HAH-O-312

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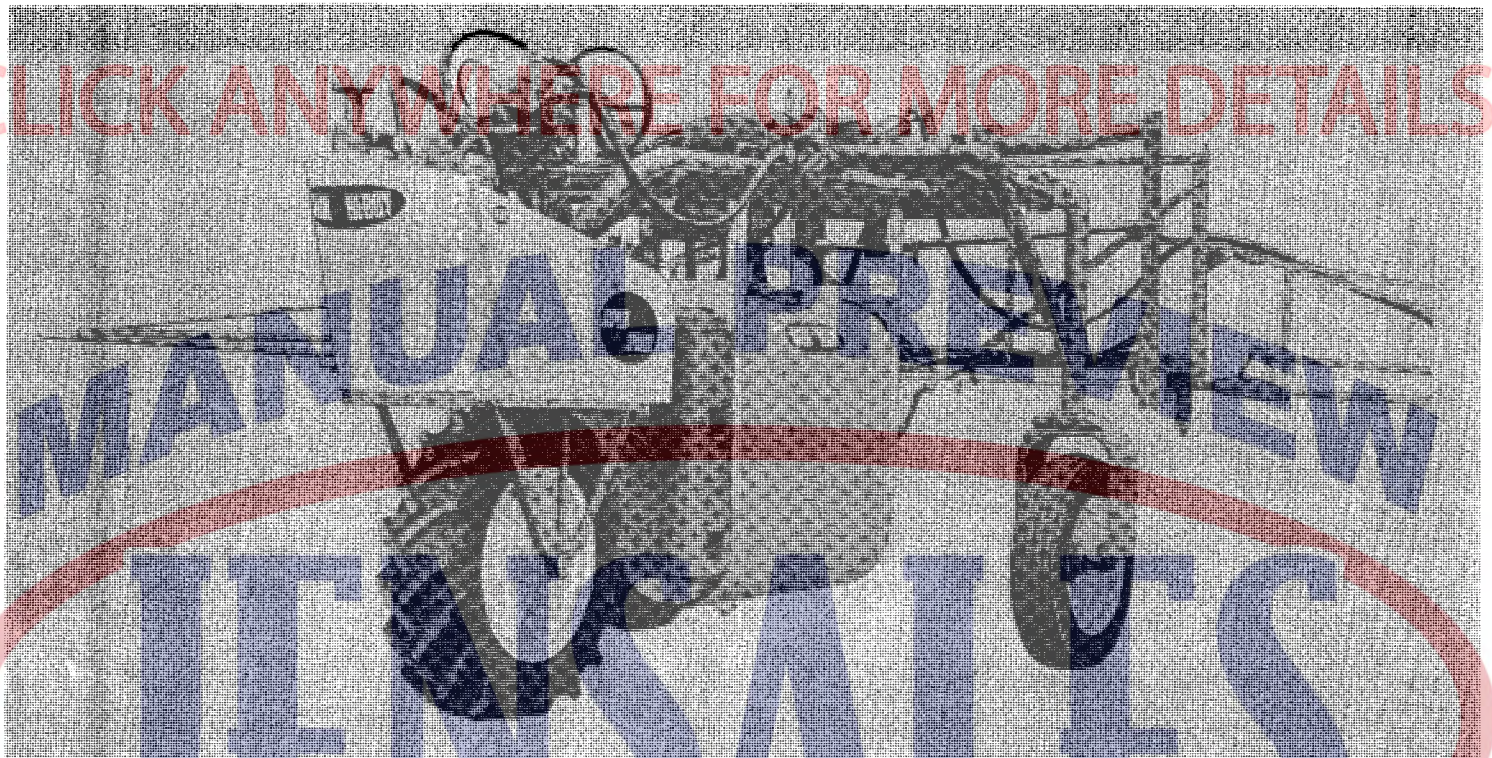


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specifications



SOLUTION TANK (409 GRADE STAINLESS STEEL)	200 GALLONS ®
FRONT TIRE	12.4 x 24
REAR TIRES	7:50 x 20
WHEEL BEARINGS (FRONT)	PILLOW BLOCK
WHEEL BEARING (REAR)	ROLLER BEARINGS
BOOM CLEARANCE	18" - 120"
REAR WHEEL TREAD	74" - 120"
WHEEL BASE	93"
ENGINE MAKE	WISCONSIN
ENGINE MODEL	VH4-D
HORSEPOWER	30 @ 2750 rpm
CLUTCH	FOOT IDLER
TRANSMISSION	WARNER GEAR T-18
SPEEDS FORWARD	3 SPEED
M.P.H. 1ST GEAR	3 @ 2750 rpm
M.P.H. 2ND GEAR	6 @ 2750 rpm
M.P.H. 3RD GEAR	11 @ 2750 rpm
M.P.H. REVERSE	2.5 @ 2750 rpm
BRAKES	BAND
DRIVE CHAIN	80 H
STEERING	FULL POWER
IGNITION	12-VOLT, 47 AMP
CROP CLEARANCE	72"



CALIBRATION AND USE OF NOZZLE SELECTION CHARTS

SELECTION OF SPRAY TIP OR NOZZLE

To provide the variety of spray patterns and capacities used in farm spray applications, nozzle manufacturers offer a complete line of nozzles and spray tips. Generally, standard flat spray tips, with tapered pattern edges, mounted on a boom with overlapping spray patterns, are used for applying herbicides and some insecticides. For band spraying applications requiring even spray distribution, the flat even spray tips are considered ideal. For spraying insecticides and fungicides, hollow cone type spray tips or disc-core tips are used. This cone spray pattern provides better foliage coverage . . . and is usually applied at higher pressures. For the surface application of liquid fertilizers, flooding tips and flooding nozzles — as well as boomless type nozzles are usually recommended . . . especially for suspension and slurry type fertilizers. In all cases, follow the recommendations of the chemical manufacturer, Agricultural Extension Service and the USDA . . . keeping driftage to a minimum.

CAUTION

AGRICULTURAL CHEMICALS CAN BE DANGEROUS. IMPROPER SELECTION OR USE CAN SERIOUSLY INJURE PERSONS, ANIMALS, PLANTS, SOIL OR OTHER PROPERTY. BE SAFE: SELECT THE RIGHT CHEMICAL FOR THE JOB. HANDLE IT WITH CARE. FOLLOW THE INSTRUCTIONS ON THE CONTAINER LABEL AND INSTRUCTIONS FROM THE EQUIPMENT MANUFACTURER.

USEFUL FORMULAS

$$\text{Acres Per Mile} = \frac{\text{Boom Swath Width In Inches}}{100}$$

$$\text{G.P.M. (Per Nozzle)} = \frac{\text{G.P.A.} \times \text{M.P.H.} \times \text{W}^*}{5940}$$

$$\text{G.P.A.} = \frac{5940 \times \text{G.P.M. (Per Nozzle)}}{\text{M.P.H.} \times \text{W}^*}$$

*W - Nozzle spacing (in boom spraying) or spray swath (in boomless spraying) . . . in inches.

SIZE SELECTION OF SPRAY TIP OR NOZZLE

Based on the chemical manufacturer's recommendations on G.P.A. application rates and nozzle types, a suitable spray tip size is chosen from the enclosed catalog tabulations. Since all the tabulations are based on spraying water, which weighs 8.34 lbs. per USA gallon, conversion factors must be used when spraying solutions which are heavier or lighter than water. Using conversion factors from the tables below multiply by the catalog tabulated G.P.M. and G.P.A. rates - to arrive at the values for the solution to be sprayed.

Weight of Solution	Specific Gravity	Conversion Factors
7.0 lbs. per gallon	.84	1.09
8.0 lbs. per gallon	.96	1.02
8.34 lbs. per gallon—WATER	1.00	1.00
9.0 lbs. per gallon	1.08	.96
10.0 lbs. per gallon	1.20	.91
11.0 lbs. per gallon	1.32	.87
12.0 lbs. per gallon	1.44	.83
14.0 lbs. per gallon	1.68	.77
16.0 lbs. per gallon	1.92	.72
18.0 lbs. per gallon	2.16	.68
20.0 lbs. per gallon	2.40	.65
Imperial Gallon = 1.20 U.S.A. Gallons		

NOZZLE SPACING

Further, if the nozzle spacing on your boom is different than those tabulated, also multiply the tabulated or calculated G.P.A. coverages by one of the following factors.

Where Tables Are Based on 20" Nozzle Spacing									
Other Spacing	8"	10"	12"	14"	16"	18"	22"	24"	30"
Conversion Factor	2.5	.2	1.67	1.43	1.25	1.11	.91	.83	.66

Where Tables Are Based on 40" Nozzle Spacing									
Other Spacing	28"	30"	32"	34"	36"	38"	42"	44"	48"
Conversion Factor	1.43	1.33	1.25	1.18	1.11	1.05	.95	.91	.83

CALIBRATION AND USE OF NOZZLE SELECTION CHARTS (Cont'd)

BEFORE YOU GO INTO THE FIELD

Check **all** your equipment — make certain that all components are clean . . . including the tank, pump, control valves, check valves, hoses, boom, strainers, nozzles and spray tips. **WARNING** . . . never use a metal object in cleaning nozzle orifices.

Adjust the boom height to give proper spray overlaps. Check the flow rate from all nozzles using a master pressure gauge mounted in the boom close to the nozzles. (After the test, remove the master pressure gauge and plug the connection). While this nozzle flow test is being conducted, check the pressure reading on the Sprayer pressure gauge to compare its reading to the pressure at the nozzles. The flow rates can be determined from the following flow charts. Remember, the catalog tabulations are based on pressures at the nozzles.

RATES OF FLOW

GPM	Seconds To Collect 1 Quart	GPM	Seconds To Collect 1 Quart
.05	300	.20	75
.06	250	.225	67
.07	214	.25	60
.08	188	.30	50
.09	167	.35	43
.10	150	.40	38
.11	136	.50	30
.12	125	.60	25
.13	115	.70	21
.14	107	.80	19
.15	100	.90	17
.17	88	1.0	15

IMPORTANT: Replace all worn tips and those with streaky or uneven patterns.

IN THE FIELD

Having established the proper spray tip type and size, spraying pressure and nozzle spacing . . . the throttle setting to provide the required sprayer speed should be determined. Because of wheel slippage, the actual Sprayer speed, as determined from the tables below, will differ from the speedometer readings. Mark off a distance of 100, 200 and 300 feet in the field where the spraying is to be done — and run the Sprayer over this distance, carefully marking the throttle setting or speedometer reading. To make measurement of test run, begin from standing start far enough ahead of first marker so that your Sprayer is at full speed before traveling the 100, 200 or 300 foot distances.

TRACTOR SPEEDS

Speed in M.P.H. (Miles per Hour)	Time Required in SECONDS to Travel a Distance of:		
	100 feet	200 feet	300 feet
3.0	23	45	68
3.5	20	39	58
4.0	17	34	51
4.5	15	30	45
5.0	14	27	41
6.0	11	23	34
7.0	9.7	19	29
7.5	9	18	27
8.0	8.5	17	26
9.0	7.6	15	23
10	6.8	14	20
12	5.7	11	17
15	4.5	9	13.6
20	3.4	6.8	10.2

MISCELLANEOUS CONVERSION FACTORS

One Acre = 43,560 square feet = 0.405 Hectares.

One Hectare = 2.471 Acres

One Gallon Per Acre = 9.35 Liters Per Hectare.

One Mile = 5,280 feet = 1610 Meters = 1.61 Kilometers.

One Gallon = 128 fluid ounces = 8 pints = 4 quarts.
= 3.79 Liters = 0.83 Imperial Gallons.

One Pound Per Square Inch (P.S.I.) = 0.070 kg/cm² (Kilogram Per Square Centimeter).

One Inch = 2.54 Centimeters.

ABBREVIATIONS

G.P.A. — Gallons per Acre

G.P.M. — Gallons per Minute

G.P.H. — Gallons per Hour

N.P.T. — Tapered Pipe Thread

M.P.H. — Miles per Hour

P.S.I. — Pound per Square Inch (gauge pressure)

trouble shooting

PRESSURE GAUGE READING	PROBLEM AREA	SPECIFIC CHECKS	CORRECTIONS
Pressure Decreasing 	Between gauge and liquid supply	1. Clogged suction screen 2. Suction hose collapsing 3. Pump wearing 4. Plugged suction or pump to pressure head hose	1. Clean screen; correct cause of clogging 2. Replace with heavier sidewall hose 3. Rebuild or replace pump 4. Clean hose and reduce cause of clogging
Pressure Fluctuating 	Between pump outlet and liquid supply or pump pulsations with piston pump	1. Check suction hose and fittings for air leaks. Air in system is indicated by puffs of air at nozzles 2. Pump pulsations are indicated by regular constant fluctuation of gauge 3. Vortex in tank suction	1. Replace hose, seal and tighten fittings 2. Add pulsation dampener to system 3. Install vortex breaker to reduce air entering system
Pressure Increasing 	Between gauge and nozzle	1. Line screen clogged 2. Nozzle screens clogged 3. Nozzle orifices plugged 4. Boom hoses, overflow hose or boom pipe becoming clogged	1. Clean screens 2. Clean screens 3. Remove material with soft brush, or air 4. Remove obstruction from clogged area
Pressure Cannot Increase 	Pump or pressure regulator	1. No by-pass liquid indicates pump capacity too small 2. From nozzle charts check liquid demand against pump capacity (Nozzle requirement + agitation requirement) 3. Pressure regulator or gauge not functional	1. Install large capacity pump or increase output of present pump 2. Reduce swath width by nozzle reduction; install smaller orifice and drive at a lower rate of speed 3. Replace or repair
Pressure Cannot Decrease 	Pump or pressure regulator	1. Pump supplying more liquid than capacity of by-pass indicated by heavy flow from by-pass 2. Non-functioning by-pass regulator	1. Increase size of bypass hose and valve; reduce pump outlet with throttling valve on suction hose; slow down pump speed; install smaller capacity pump; go to larger nozzle orifices and increase applicator ground speed or increase swath width with more nozzles 2. Repair or replace