

# WARNING



Always read Operator's manual before using equipment.

Do not remove any safety devices or shields. Never service, clean or repair an operating piece of equipment.



Always watch for this symbol to point out important safety precautions, it means "ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!"

CANADA HARDI INC. 477 Exeter Road London, Ontario CANADA NSE 223 Telephone 519-685-6730 Telex 064 7247 U.S.A. HARDI INC 302 1st Avenue N. P.O. Box 335 Altoona, Iowa 50009 U.S.A. Telephone 515-967-5152

### HARDI TR25 AND SM25 TRAILER AND SKID SPRAYERS





#### GENERAL INFORMATION

The TR25 trailer sprayers are available in 2 wheel tractor pull type, and 3 wheel hand or tractor pull models.

The SM25 skid sprayers are designed to be quickly installed in pickup trucks. All 3 models use the same basic tank and frame.

For those operators concerned only with the most economically priced sprayer, the unit with 12 volt powered diaphragm pump is quite adequate. For those operators involved in commercial crop raising with relatively heavy user requirements, or those wishing to spray over 25 feet high, we strongly recommend the Hardi diaphragm pumps model 500, 600 or 320 with 2, 3 or 4 HP gasoline engines. These pumps can handle a very wide variety of chemicals with extremely low maintenance, and should provide years of satisfactory service.

An optional 7' working width spray boom is available with adjustable nozzle spacing and telescopic adjustment for transport. Also available, is an optional 4 nozzle boom for attaching directly to the hand gun.

#### OPERATION

1) Pull type - Attach sprayer to tractor drawbar.



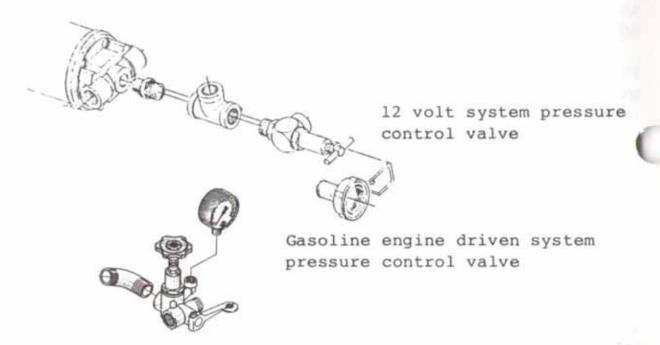
VERY IMPORTANT. Make absolutely sure that the pin you use to attach the spray to the tractor drawbar is PROPERLY SECURED WITH A SUITABLE SAFETY PIN.

2) Skid Mount - Install sprayer in truck bed.



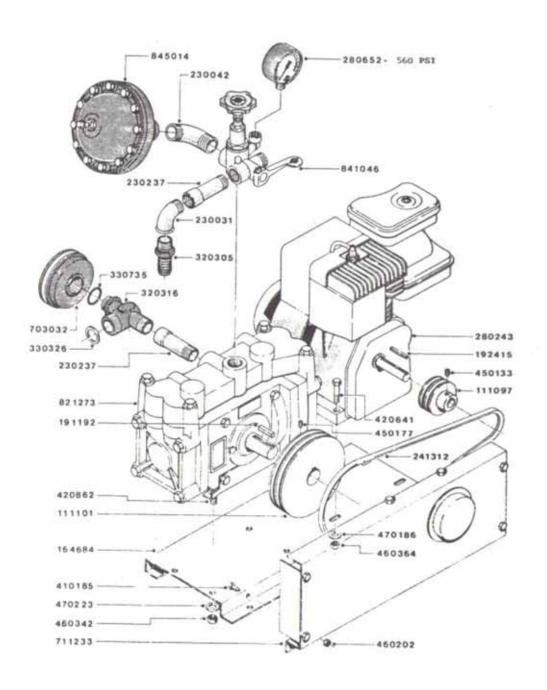
VERY IMPORTANT. Make absolutely sure that the sprayer is adequately secured in the truck bed by use of suitable bolts.

- 3) Both models
- a) Fill tank half full with water
- b) Check all hose connections for leaks
- c) 12 volt model Attach electrical leads from pump to tractor or truck "accessory" ignition switch outlet. Red lead is POSITIVE, black lead NEGATIVE.
- d) Gasoline engine model Check engine oil level and engine air cleaner. Fill with gasoline.
- e) Release system pressure by turning out pressure control valve fully.

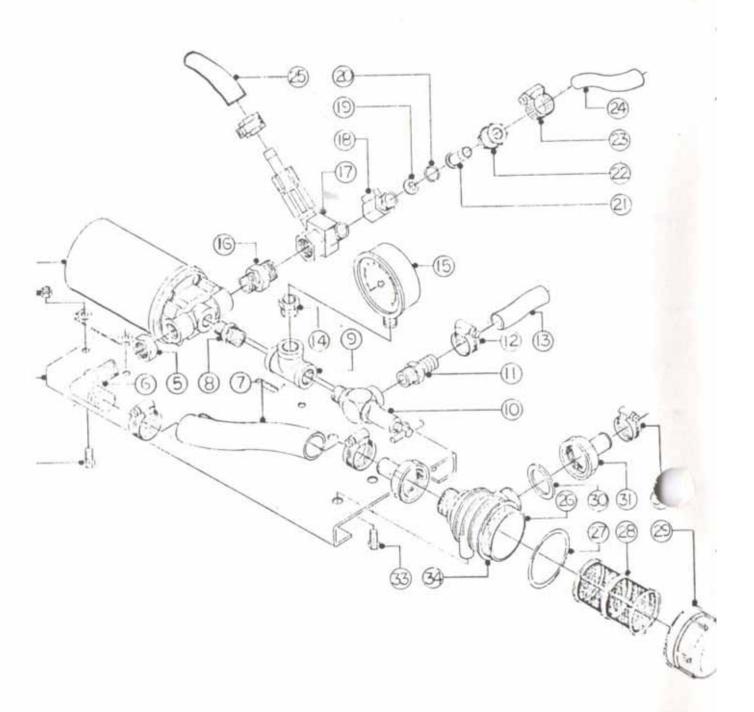


Ensure hand gun turned off (see 841046 lever re H and no. 18 valve re I)

- f) Start engine (or 12 volt pump) and allow 2 minutes warm up.
- g) Set pressure to desired level by turning in pressure control valve and observing pressure gauge immediately adjacent to valve.
- h) Open lever 841046 to hand gun and operate hand gun while checking for system leaks. Check tank for adequate agitation. Check pressure gauge again while operating gun to ensure correct pressure for the upcoming chemical application.



i) Open lever no. 18 to hand gun and operate hand gun while checking for system leaks. Check tank for adequate agitation. Check pressure gauge again whi operating gun ot ensure correct pressure for the upcoming chemical application.



j) Stop engine (or electric pump).



CAREFULLY READ CHEMICAL CONTAINER INSTRUCTIONS. CAREFULLY POUR THE APPROPRIATE AMOUNT OF CHEMICAL INTO THE TANK.

Top up tank with water - start pump and let run for 2-5 minutes to ENSURE PROPER TANK MIXING.



EXTREME CAUTION MUST BE USED WHEN HANDLING CHEMICALS. PROPER PROTECTION MUST BE GIVEN TO EXPOSED PARTS OF THE BODY AND EYES.

PROPER CLOTHING MUST BE WORN REGARDLESS OF HOW HOT IT MIGHT BE. KEEP CHEMICALS OUT OF THE REACH OF CHILDREN OR ANIMALS.



You are now ready to spray. While spraying KEEP A CONSTANT CHECK ON APPLICATION TARGET AREA. DO NOT ALLOW HARMFUL CHEMICALS TO DRIFT OVER TO YOUR NEIGHBOURS PROPERTY, OR TO DRIFT OVER TO OTHER AREAS OF YOUR GARDEN.

- k) Application Rate Control. Obviously you will want to apply the chemical at the rate specified on the chemical container. Three factors influence application rate.
  - 1) Spray nozzle size
  - Pressure
  - 3) Ground speed, or in the case of the hand gun, the length of time you spray at the target area

As standard equipment with the sprayer you receive a handgun with 4 of number 1553 disc nozzles and one of 370134 grey core (swirl plate).

The handgun will apply one of the 4 gallons per minute rate shown depending on which number disc nozzle you use (each disc nozzle has its number stamped on it).

DISC NOZZLE	CORE	P.S.I.	U.S. GALLONS
S			PER MINUTE
1553-14	370134	30	.22
1553-24	370134	30	.42
1553-30	370134	30	.50
1553-35	370134	30	.75

As can be seen, a number 1553-14 nozzle combined with a 370134 core, used at 30 PSI will give you .22 GPM.

With the optional 7' boom you receive number 4110-16 spray tips.

At 30 PSI and 3 MPH these tips will apply 28 Gallons Per Acre.

# 110° Flat Spray Nozzle

NOZZLE No.	PRESSURE	U.S.			S. GA			-		
(GPA)	P.S.I.	GPM	4	5	6	7	8	10	12	14
	. 20	.08	5.9	4.8	4.0	3.4	3.0	2.4	2.0	1.7
4110-10	30	.10	7.4	5.9	5.0	4.2	3.7	3.0	2.5	2.
(7.4)	40	.12	8.9	7.1	5.9	5.1	4.5	3.6	3.0	2.
(1.4)	50	.13	9.7	7.7	6.4	5.5	4.8	3.9	3.2	2.
	60	.14	10.4	8.3	6.9	5.9	5.2	4.2	3.5	3.
	20	.13	9.7	7.7	6.4	5.5	4.8	3.9	3.2	2.
4110-12	30	.16	11.9	9.5	7.9	6.8	5.9	4.8	4.0	3.
(11.9)	40	.18	13.4	10.7	8.9	7.6	6.7	5.3	4.5	3.
(11.0)	50	.21	15.6	12.5	10.4	8.9	7.8	6.2	5.2	4.
	60	.23	17.1	13.7	11.4	9.8	8.5	6.8	5.7	4.
	20	.16	11.9	9.5	7.9	6.8	5.9	4.8	4.0	3.
4110-14	30	.20	14.9	11.9	9.9	8.5	7.4	5.9	5.0	4.
(14.9)	40	.23	17.1	13.7	11.4	9.8	8.5	6.8 7.7	5.7	4. 5.
, ,	50 60	.26	19.3	15.4 16.6	12.9	11.0 11.9	9.7	8.3	6.4	5.
		_	-							-
	20	.20	14.9	11.9	9.9	8.5	7.4	5.9	5.0	4.
4110-16	30	.24	17.8	14.3	11.9	10.2	8.9	7.1	5.9 6.9	5. 5.
(17.8)	40 50	.28	20.8	16.6 18.4	13.9 15.3	13.2	10.4	8.3 9.2	7.7	6.
	60	.34	25.2	20.2	16.8		12.6	10.1	8.4	7.
	20	.29	21.5	17.2	14.4	-	10.8	8.6	7.2	6.
4440 000	30	.35	26.0	20.8	17.3		13.0	100000000000000000000000000000000000000	8.7	7.
4110-20	40	.41	30.4	24.4	20.3		15.2	12.2	1	8.
(26.0)	50	.45	33.4	26.7	22.3	19.1	16.7	13.4	11.0 - 0.0 - 0.0 - 0.0	9
	60	.50	37.1	29.7	24.8	21.2	18.6	14.9	12.4	10
	20	.38	28.2	22.6	18.8	16.1	14.1	11.3	9.4	8
4110-24	30	.46	34.2	27.3	22.8		17.1		11.4	9
	40	.53	39.4	31.5	26.2	A CONTRACTOR OF THE PARTY OF TH	19.7	The second second second	The second second	11.
(34.2)	50	.60	44.6	35.6	29.7				14.9	
	60	.65	48.3	38.6	32.3	_			16.1	
	20	.53	39.4	31.5	26.2	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			13.1	
4110-30	30	.65	48.3	38.6	32.2				16.1	
(48.3)	40	.76	56.4	45.1	37.6				18.8	
(40.0)	50	.84	62.4		41.6		The second secon		20.8	
	60	.92	68.3	54.6	45.5				22.8	
	20	.73	54.2	43.4	36.1				18.1	
4110-36	30	.90	66.8	53.5		777000000000000000000000000000000000000			22.3	
(66.8)	40	1.04	77.2	Printer States and States	51.5	The state of the s	A CONTRACTOR OF THE PARTY OF TH	Programme and the second	25.7 28.7	
(55.5)	50 60	1.16	86.1 94.3	68.9 75.4	57.4 62.9				31.4	
		-	-	-	46.0	-		-	23.0	-
Godfalls asset	20 30	1.14	69.1 84.6	55.2 67.7	56.4	200		A STATE OF THE SAME	28.2	
4410-44	40	1.32	98.0	78.4	65.3	100000000000000000000000000000000000000		100000	32.7	
(84.6)	50	1.47	109.1		72.8				36.4	
	60	1.61	119.5	The state of the s	13.37 - 17.44				39.8	

ne Spray Nozzle			GALLONS PE ONE NOZZLE PER ROW			TWO NOZZLES PER ROW			OW SPACING THREE NOZZLES PER ROW -30'		
No.	PRESSURE P.S.I.	U.S. GPM	3 MPH	4 MPH	5 MPH	3 MPH	4 MPH	5 MPH	3 MPH	4 MPH	5 MPH
53-10 VITH LUE WIRL	40 60 80 100 150	.07 .09 .11 .12	4.6 5.9 7.3 7.9 9.9	3.5 4.5 5.4 5.9 7.4	2.8 3.6 4.4 4.8 5.9	14.6	7.0 9.0 10.8 11.8 14.8	8.8 9.6	13.8 17.8 21.8 23.8 29.7	11.0-7.0-1-	100000000000000000000000000000000000000
53-12 VITH ILUE WIRL	40 60 80 100 150	.10 .12 .14 .15	6.6 7.9 9.2 9.9 12.5	5.0 5.9 6.9 7.4 9.4	4.0 4.8 5.5 5.9 7.5	19.8	13.8	11.8	19.8 23.8 27.7 29.7 37.6	15.0 17.8 20.8 22.3 28.2	
53-14 VITH ILUE WIRL	40 60 80 100 150	.11 .14 .16 .18	7.3 9.2 10.6 11.9 14.5	5.4 6.9 7.9 8.9 10.9	4.4 5.5 6.3 7.1 8.7	14.6 18.4 21.2 23.8 29.0	15.8	11.0 12.6 14.2	700	20.8 23.8	13.1 16.6 19.0 21.4 26.1
53-14 VITH iRAY WIRL	40 60 80 100 150	.26 .32 .37 .42 .51	17.2 21.1 24.4 27.7 33.7	12.9 15.8 18.3 20.8 25.2	10.3 12.7 14.7 16.6 20.2	42.2 48.8 55.4	100000000000000000000000000000000000000	25.4 29.4 33.2	63.4 73.3	38.6 47.5 54.9 62.4 75.7	1000
53-16 VITH iRAY WIRL	40 60 80 100 150	.32 .39 .46 .51	21.1 25.7 30.4 33.7 40.9	15.8 19.3 22.8 25.2 30.7	12.7 15.4 18.2 20.2 24.6	60.8 67.4	The state of the state of the	30.8 36.4 40.4	91.1	47.5 57.9 68.3 75.7 92.1	
53-18 VITH iRAY WIRL	40 60 80 100 150	.37 .45 .52 .58	34.3	22.3 25.7 28.7	20.6	58.8 68.6 76.6	36.6 44.6 51.4 57.4 70.2	35.6 41.2 46.0	89.1 103 115	66.8 77.2	44.0 53.5 61.8 68.9 84.3
53-20 VITH LACK WIRL	40 60 80 100 150	.48 .59 .68 .76	44.9 50.2	29.2 33.7	23.4 26.9 30.1	77.8 89.8 100	47.6 58.4 67.4 75.2 92.0	46.8 53.8 60.2	117 135 150		70.1
53-20 VITH LACK WIRL	40 60 80 100 150	.70 .86 1.00 1.11 1.37	66.0	42.6 49.5 54.9	39.6	113 132 146	69.4 85.1 99.0 110 136	68.2 79.2	170 198	104 128 148 165 203	83.2 102 119 132 163
53-40 VITH LACK WIRL	40 60 80 100 150	.97 1.18 1.37 1.53 1.87		58.4 67.8		156 181	96.0 117 136 151 185	E. C. C. L. C. C. C.	234	144 175 203 227 278	115 140 163 182 222

#### MAINTENANCE

- Tank drainage. (See drawing H & I in OPERATION section). Accomplished by:
  - a) 12 v system Loosen clamp no. 32 and remove connector no. 31.
  - b) Gas engine system remove connector holding suction line to fitting no. 320316.
- 2) Filter Maintenance.

Suction line filter is located close to pump.

- a) Remove cap no. 29
- b) Wash filter no. 28 thoroughly under running water.



DO NOT CONTAMINATE HUMAN OR ANIMAL DRINKING SUPPLY WHEN WASHING FILTER

c) Reassemble.

These filters will require regular attention if the sprayer is to keep operating at optimum performance levels and should be inspected at least once daily, and cleaned if necessary.

DO NOT USE SHARP OBJECTS TO CLEAN FILTERS. As a general rule when any variation is noticed to sprayer pressure during operation, partially, or totally blocked filters are the most likely cause.

3) Pulsation Damper Adjustment. (Gas Engine Driven Sprayers)
To ensure the smoothest possible diaphragm pump

To ensure the smoothest possible diaphragm pump operation, it is very important that the air pressure inside the pulsation damper on the pump is adjusted within the following limits.

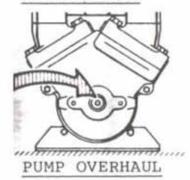
## SPRAYER PRESSURE (PSI) requires PULSATION DAMPER PRESS.

21-42	0-14
42-210	14-42
210-350	42-56

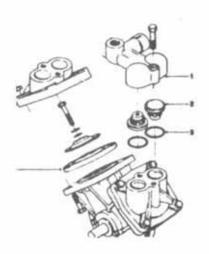
This adjustment is very simple and only requires a regular tire inflation air line and tire pressure gauge.

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#### LUBRICATION



Grease every 100 hours with no. 2 consistency lithium base grease. (DO NOT OVERGREASE OR YOU WILL DAMAGE BEARING SEALS).



- 1) Remove valve chamber (1).
- Check and note location of valves (2) in order to ensure correct replacement during reassembly.
- Remove diaphragm cover (4).
- 4) If liquid has entered the pump crankcase below the diaphragm, be sure to clean all components carefully with a suitable cleaning solvent, then repack bearings with a no. 2 consistency lithium based grease.
- 5) Reassemble in reverse order making sure to install new O rings (3) as well as other new parts required.

-PACKAGED pump overhaul kits containing diaphragms, 0 gs and valves are available under the following part bers.

500 Pump - 750142

600 Pump - 750153

## TROUBLE SHOOTING

FAULT	PROBABLE CAUSE	ACTION
No spray from nozzles when spray	1. Tank empty.	Fill tank.
is turned on.	2. Air in the system.	Prime pump and run long enough to expel
	<ol> <li>Pump filters or nozzle filters blocked.</li> </ol>	Dismantle filters, clean and re-assemble.
	4. Tank outlet blocked.	Clear blockage.
	<ol> <li>Nozzle assembled incorrectly.</li> </ol>	Take nozzles apart and re-assemble as shown in manufacturers' instruction book.
	6. Pump faulty.	Fit new or reconditione pump.
When spray is turned on it	1. Filters blocking up.	Dismantle filters, clean and re-assemble.
stops after a short time.	<ol><li>Dirty water supply.</li></ol>	Use only clean water.
	<ol> <li>Sprayer tank is airtight.</li> </ol>	Clean out the vent before tank collapses.
Less spray from some nozzles than	<ol> <li>Nozzles starting to block.</li> </ol>	Dismantle nozzies, clean and re-assemble.
others.	<ol> <li>Mixture of nozzle sizes fitted.</li> </ol>	Check output code on each tip and fit correct size.
	3. Nozzles worn.	Check output individual fit new nozzle parts where needed.
Less spray from nozzles on one boom compared with another.	Individual boom control lever not fully opened or blocked.	Check - rectify.

FAULT	PRO	BABLE CAUSE	ACTION
Poor tank agitation.	1.	Pump faulty or inadequate.	Fit smaller nozzles or reconditioned pump.
	2.	Return pipe partially blocked.	Clean out.
Pressure gradually increasing, spray output decreasing.	1.	Nozzle filters blocking.	Dismantle nozzies, clean filters, reti and check the pressure is normal.
	2.	Pressure gauge strained.	Turn spray off and check that needle returns to zero. If it does not, fit a new gauge.
Pressure falling off.	1.	Pump filter blocking.	Dismantle, clean an refit filter.
	2.	Nozzles wearing out.	Fit new nozzle part of same size.
	3.	Pump worn.	Fit new or recondi- tioned pump.
Coarse foam in sprayer tank.	1.	Return pipe above level of liquid in tank.	Extend return pipe down to bottom of tank.
	2.	Over vigorous agitation during filling.	Fill sprayer with care.
Fine foam in sprayer tank.	suc	is leaking into tion side of pump into pump itself.	Locate and stop the

If filters continue to block, check contents of apray tank for solid material due to inadequate mixing of chemical, mixing of incompatible formulations, corrosion, dirty water, etc.

### WINTER STORAGE

- Thoroughly rinse sprayer system with a mixture of non foaming household detergent in approximately 10 gallons of water for 30 minutes then drain.
- 2) Mix 1/2 gallon of household ammonia with approximately 10 gallons of water, run sprayer until all hoses filled - let stand overnight.
- Drain and flush out entire system for al least 10 minutes.
- 4) Check that tank is empty, then put in approximately 3 gallons of suitable anti-freeze mixture, turn pressure control valve all the way out, turn all boom controls on and circulate for 2 minutes.



MAKE ABSOLUTELY SURE ALL SPRAY RESIDUE
IS DRAINED OFF IN A SAFE LOCATION WHERE
IT CANNOT CREATE ANY KIND OF HEALTH
HAZZARD.

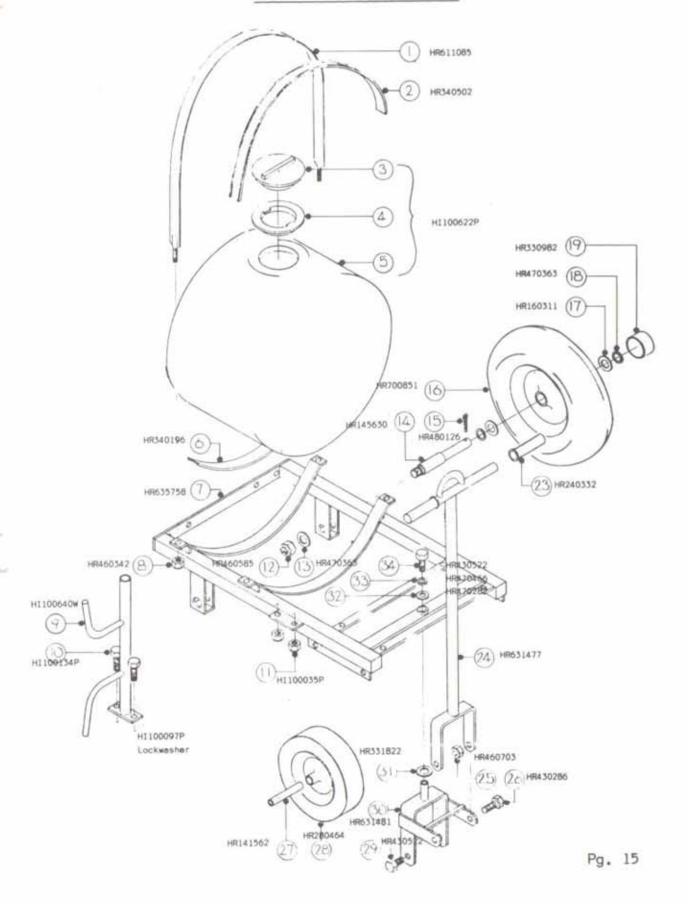
- 6) Loosen pressure regulator valve and close boom control valves.
- Remove tips and screens, clean and store in safe, dry location.
- 8) Check hoses are not kinked or partially worn through.
- 9) Apply touch up paint where necessary.
- 10) Lubricate sprayer (see lubrication section)
- 11) Either remove pump and place in heated storage or make absolutely sure pump contains and adequate supply of anti-freeze to prevent freezing.
- 12) Store in safe, dry location away from animals and direct sunlight.

# TR25 PULL TYPE WITH TRACTOR DRAWBAR HR511085 HR340502 (3) (4) HI100622P HR330982 (5) HR470363 HR160311 HR700851 (10 HR1456304 3306 43 Bishing HR340196 HR635758 HA460585 (2) (3) HR460342 (B) 00540W 10 HI100132H HE100035P HR421002 (O) HR460342

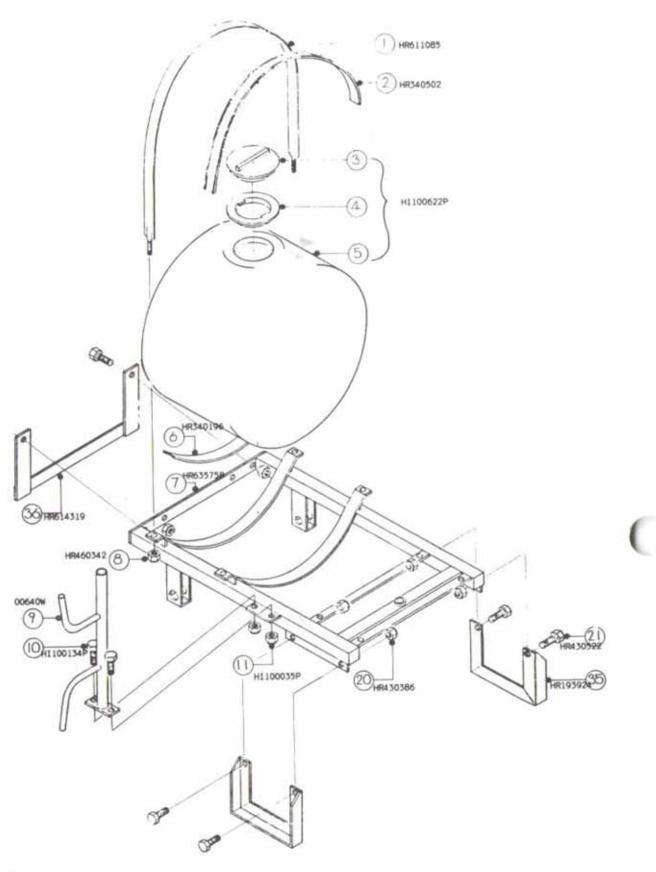
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### TR25 PULL TYPE WITH COMBINATION HAND PULL

### AND TRACTOR DRAWBAR

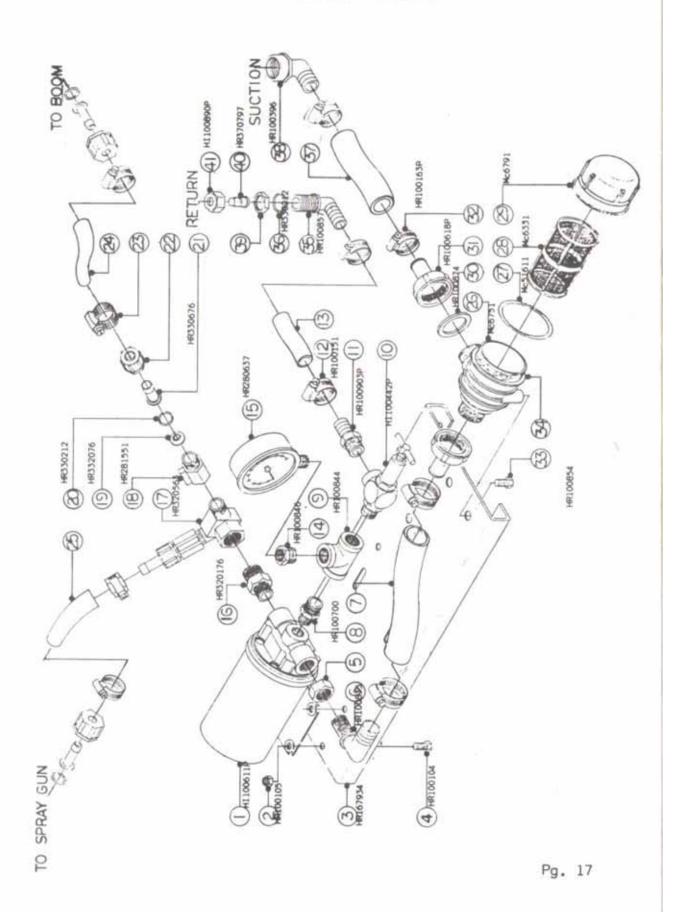


## SM25 SKID MOUNT

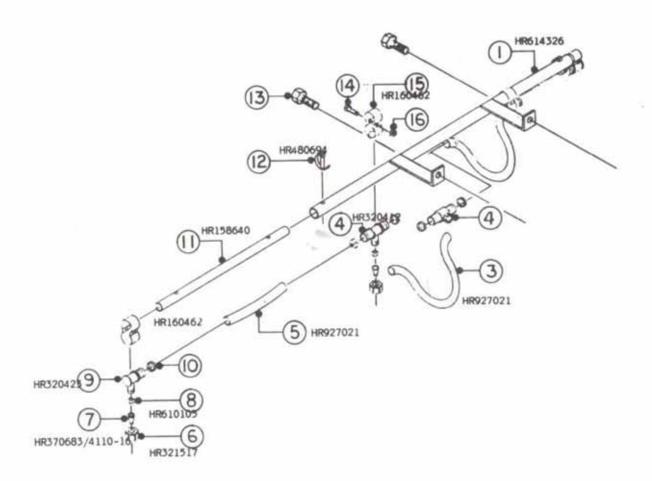


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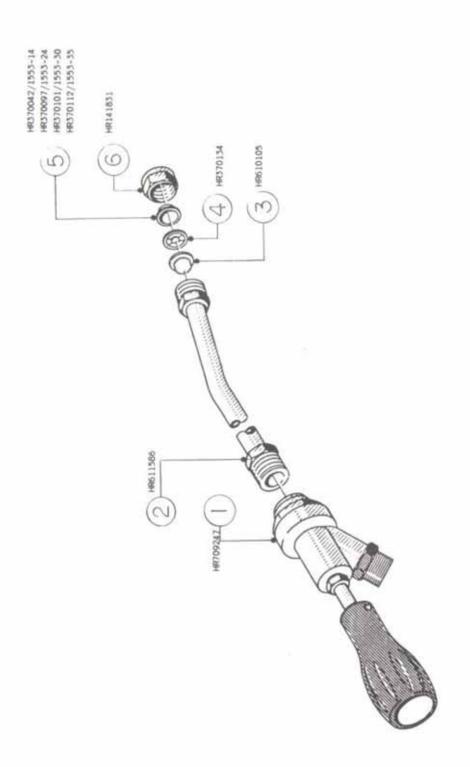
# 12 V PUMPING SYSTEM



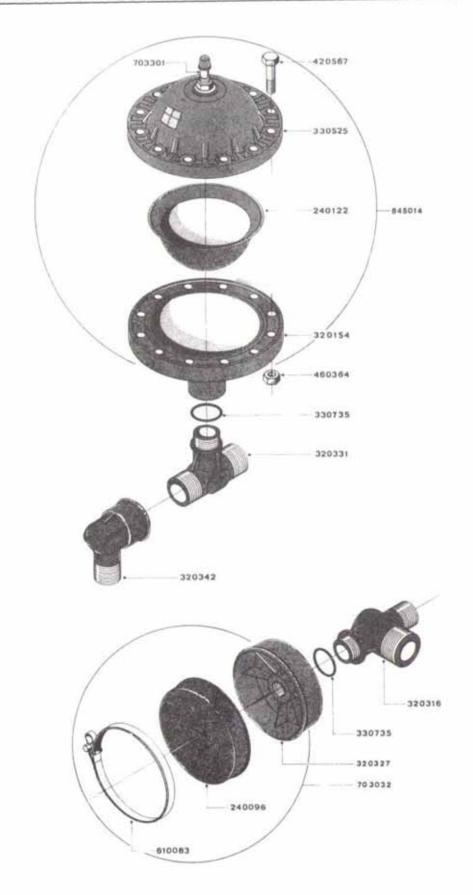
### OPTIONAL 7' BOOM



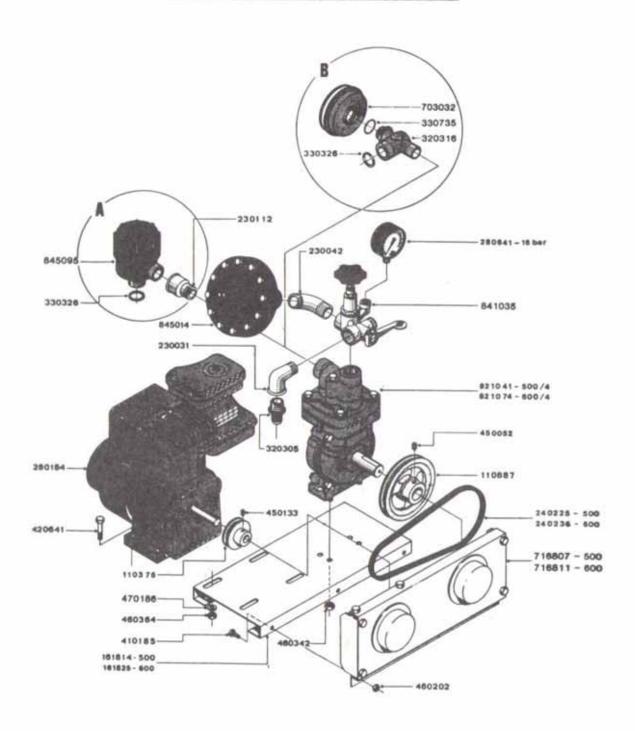
### HANDGUN



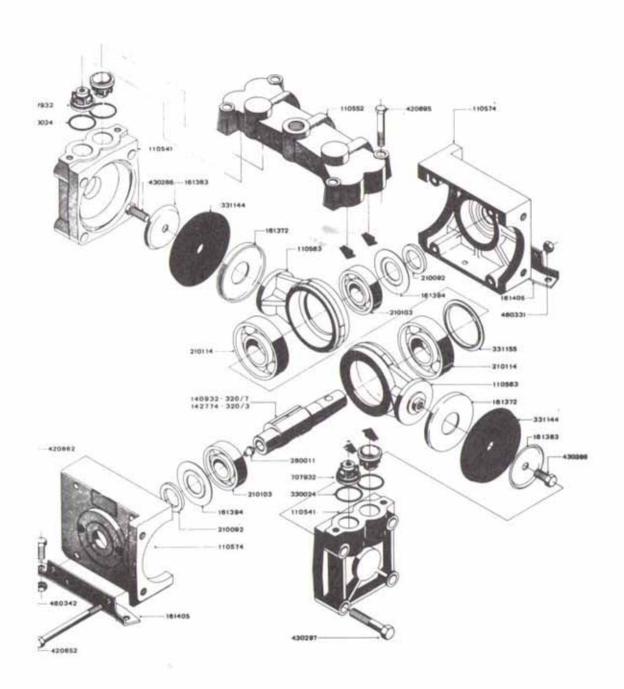
# PULSATION DAMPER AND SUCTION PULSATION DAMPER



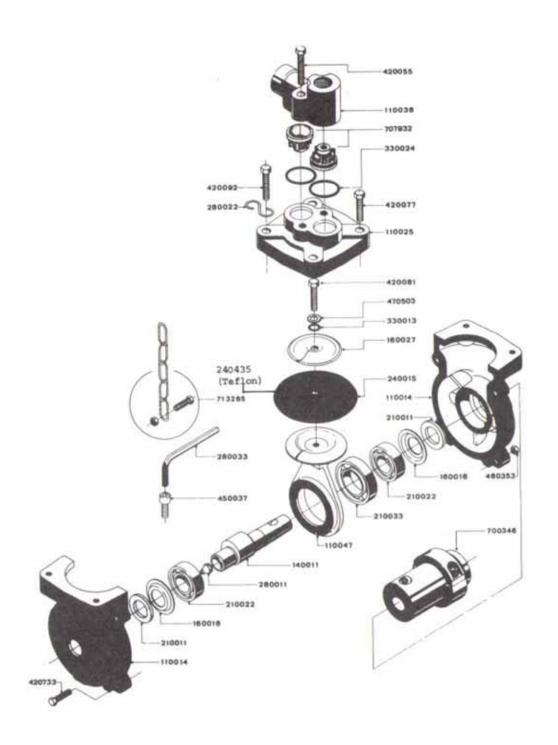
### PUMP UNIT MODEL 500 AND 600



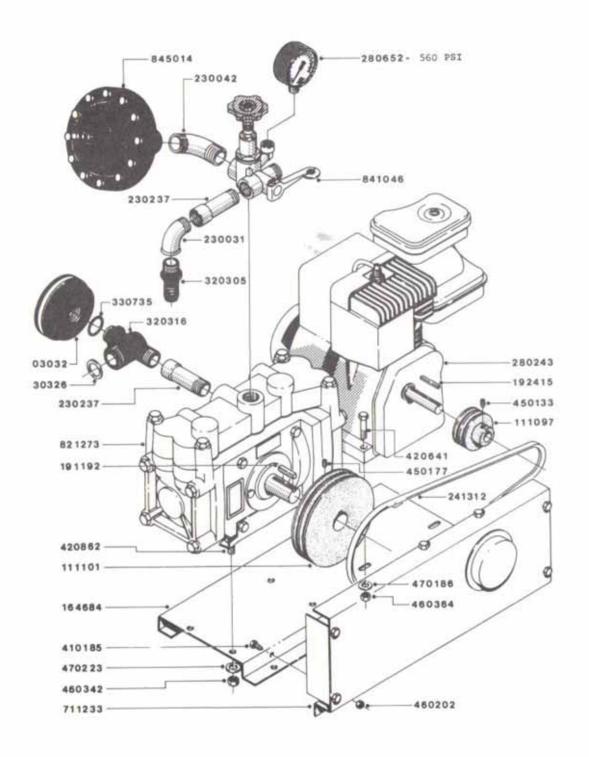
### PUMP UNIT MODEL 320



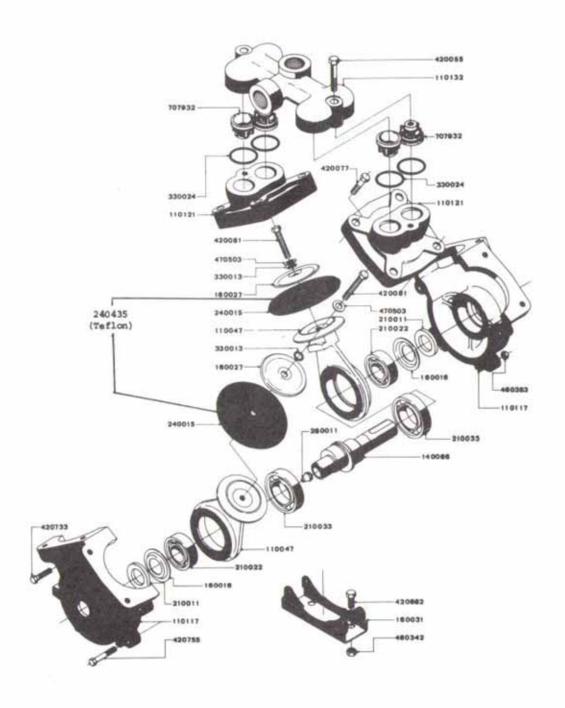
### MODEL 500/4 PUMP



### MODEL 320 PUMP



### MODEL 600/4 PUMP



# 1 YEAR WARRANTY



HARDI INC. provides the following limited warranty for the machine identified on the reverse side of this certificate in as much as it will be free from defects in material and workmanship under normal use and service for one year from date of purchase of the new machine from an authorized HARDI INC, dealer to the original purchaser.

HARDI INC. assumes no responsibility for damage caused by misuse, neglect, acts of God, accidents, modifications or unauthorized repairs attempted or made by other than HARDI INC authorized dealers. This warranty only applies if the sprayer has been operated and maintained in accordance with the instructions in the operators manual. Engines, tires, tubes, electronic controls and other components or trade accessories not manufactured by HARDI INC, are subject only to warranty by their respective manufacturers and are not otherwise warranted by HARDI INC,

This warranty is limited to the replacement, from of cost to the original purchaser, of any part or parts of the machine that, in HARDI INC,'s judgement, shows evidence of defects in material and/or workmanship, provided said part(s) is returned to us prepaid through our dealer, accompanied by the proper warranty claim. HARDI INC, will accept no responsibility for cost of labour or transportation, nor for consequential damages or contingent liabilities. This warranty does not extend to loss of crops, loss because of delay in harvesting or any expense or loss incurred for labour, supplies, substitute machinery, rental or for any other reason.

HAROI INC. reserves the right to make any changes or make improvements to its products at any time without incurring any obligations to make such changes or improvements on equipment previously manufactured by it.

HARDI INC. MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE,

NO EMPLOYEE OR REPRESENTATIVE IS AUTHORIZED TO CHANGE THIS WARRANTY IN ANY WAY OR GRANT ANY OTHER WARRANTY UNLESS SUCH CHANGE IS MADE IN WRITING AND SIGNED BY AN OFFICER OF HARDI INC. AT ITS HEAD OFFICE IN LONDON, ONTARIO, CANADA.

# **5 YEAR TANK WARRANTY**

HARDI INC. provides the following limited warranty to the original purchaser with respect to the polyethylene tenk from one year to five years subject to the following terms, conditions and contributions. The tank to qualify for 's extended warranty, must be drained and flushed with fresh water after each day of use. HARDI INC. 's liebility limited to replacement of the tank, FOB our plant in London, Ontario, Canada. AT NO COST TO THE PURCHASER DURING THE FIRST TWO YEARS, AT TWENTY-FIVE PERCENT (25%) OF THE THEN CURRENT RETAIL PRICE DURING THE THEN CURRENT (50%) OF THE THEN CURRENT RETAIL PRICE DURING THE FIFTH YEAR.

The five year limited warranty is subject, in each instance, to the tank being inspected and approved for replacement or repair by HARI INC. personnel before HARDI INC. will accept any liability hereunder.

## WARRANTY REGISTRATION CERTIFICATE

This certificate must be filled in by both the Purchaser and the Dealer when the machine is purchased, and forwarded to HARDI INC.

Mechine:			
Mode1:			
MACHINE S	SERIAL NO	 ,	

We the undersigned Dealer and Purchaser, hereby certify the above machine was purchased on the date shown below.

Dealer:	
Address:	
Signature:	
Purchaser's Name:	
Purchaser's Address:	
Signature:	
Dete:	

