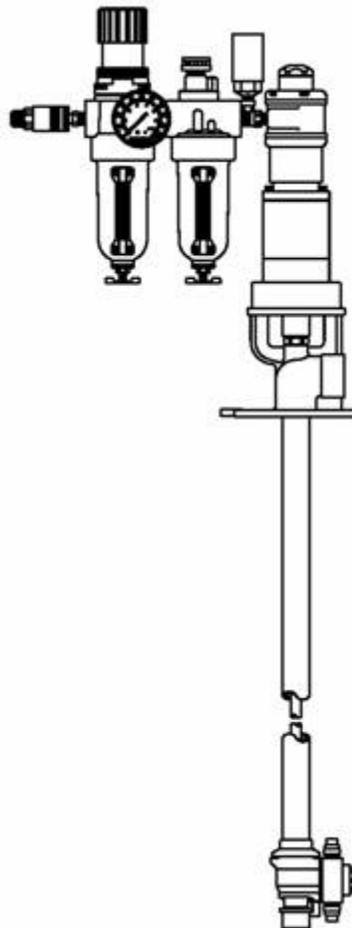




Spraying Systems Co.[®]

Experts in Spray Technology

AA290AG_ SERIES AIR MOTOR-DRIVEN TANK WASHER



OWNER'S MANUAL

MI AA290AG

TABLE OF CONTENTS

FORWARD	3
INTRODUCTION	3
SPECIFICATIONS & OPERATING CONDITIONS	4
DATA SHEETS	
DS 290AG – Air motor driven tank washer features and ordering	5
DS 290AG-1 – Tank washer dimensional data and flow rate data	6
DS 46340-290 – drive assembly performance and dimensional data	7
SAFETY PRECAUTIONS	8
INSTALLATION	
Connections	8-9
Mounting.....	9
Liquid Inlet Connection.....	9
Mechanical Clearances.....	9
Grounding.....	9-10
High Impact Sprays.....	10
Air Motor Lubrication	10
Automatic Lurication.....	10
OPERATION.....	10-11
MAINTENANCE	
Removal / Replacement of spray nozzles.....	11-12
Removal / Replacement of nozzle hub bushings.....	12
Removal of air motor drive	12
Removal / Replacement of air motor drive coupling	12
Removal / Replacement of o-ring.....	12
Removal / Replacement of seals, gaskets, bushings, and o-rings on drive shaft	13
Replacement of air motor drive	13
PARTS LISTS	
PL 290AG – Air motor driven tank washer.....	14
PL 46340 – Air motor drive assembly	15
PL 21030 – Lubricator assembly	16
WARRANTY	17
MAINTENANCE RECORD.....	18
EC DECLARATION OF INCORPORATION	19

IMPORTANT: PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLING OR OPERATING UNIT.
SAVE FOR FUTURE REFERENCE

PROPRIETARY NOTICE

THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE EXCLUSIVE PROPERTY OF **SPRAYING SYSTEM CO.**

REPRODUCTION IN WHOLE OR PART IS PROHIBITED WITHOUT PRIOR CONSENT OF **SPRAYING SYSTEMS CO.**

FORWARD

The equipment and/or parts described in this document were manufactured and assembled with quality and high reliability, which have become synonymous with the name Spraying Systems Co. The description and specifications contained herein were effective on the revision date of this MI. Spraying Systems Co. reserves the right to alter or modify any unit specification on Spraying Systems Co. product without notice or obligation.

INTRODUCTION

This tank washer meets the requirements set forth in EC Directive 2006/42/EC. The latest motor manufacturer's Operation & Maintenance Manual is included with this tank washer as a separate manual since important safety precautions pertaining to the installation and operation of the motor itself are included.

SPECIFICATIONS & OPERATING CONDITIONS

- Liquid Pressure: 250 psi (17 bar) max.
- Flow Rates: Up to 200 gpm (757 l/m)
- Pressure Drop at Max Flow: 22 psi (1.5 bar)
- Liquid Temperature: 200 degrees F (93 degrees C) max.
- Air Pressure to Motor: 18 psi (1.24 bar) max.
- Ambient Temperature: 104 degrees F (40 degrees C) max.
- Tank Diameter: 80 feet (24.4 m) max recommended
- Spray Head with two nozzles fits through a 7.25" (184.1 mm) dia. opening.
- Spray Head with four nozzles fits through a 8.25" (209.5 mm) dia. opening.

Tanks over the specified diameters could possibly be cleaned adequately depending on the maximum tank dimension, cleaning solutions being used, temperatures, spray pressures, flow rates and the material being cleaned from the tank.

The tank washer may be used with plain water or with a variety of chemicals (compatible with 316 SS, ethylene propylene rubber, and carbon graphite filled Teflon®). However, if chemicals are used, review MSDS sheets and chemical compatibility with material used to construct this product. Also, the unit should be flushed with clean water at the end of the day before the unit is stored. A liquid line strainer ahead of the unit is recommended to remove large particles which may damage the unit.

DATA SHEETS

NOTE: CERTAIN ATMOSPHERES WITHIN THE TANK BEING CLEANED COULD BECOME EXPLOSIVE, SUCH AS DUST PARTICLES IN A FLOUR SILO, OR FUMES IN PAINT MIXING TANKS. FOR THIS REASON, THE FOLLOWING SAFETY PRECAUTIONS SHOULD BE OBSERVED.

THE AA290AG-- AIR MOTOR-DRIVEN ROTARY TANK WASHER PROJECTS CLEANING SOLUTION IN CONCENTRATED HIGH IMPACT, SOLID STREAM SPRAYS... WITH ROTATING MOTION THAT COVERS ALL INTERNAL SURFACES OF TANKS, SLOW, CONTROLLED ROTATIONAL SPEEDS OF ROTATING HOUSING AND NOZZLE TURRET PROVIDE A THOROUGH CLEANING ACTION ON THE TANK SURFACE.

NOTE: LUBRICATOR ASSEMBLY (SUPPLIED WITH UNIT) IS REQUIRED FOR AIR SUPPLY LINE.

AIR INLET CONN. 1/4" NPT (M) OR 1/4" ESPT (M)

15 1/2" (396 mm) APPROX.

GROUND SCREW (NOT SHOWN)

AIR DRIVEN MOTOR ASSEMBLY

LIQUID INLET CONN. 2" NPT (F) OR 2" BSPT (F)

INLET BODY MOUNTING FLANGE (SEE DATA SHEET 290AG-1)

EXTENSION LENGTH

7 3/4" (197 mm)

ROTATING NOZZLE TURRET WITH SOLID STREAM VEEJET® NOZZLES --2 REQUIRED (4 NOZZLE TURRET OPTIONAL) TYPE 316 STAINLESS STEEL 3/4"NPT (F)

FEATURES:

- CAN BE USED AS A PERMANENTLY INSTALLED UNIT OR REMOVABLE JNIT.
- EXTENSION INTO TANK IS FULLY ADJUSTABLE.
- NOZZLE TURRET WITH 2 OR 4 SOLID STREAM NOZZLES IS GEAR DRIVEN TO GIVE FULL COVERAGE OF INTERNAL TANK SURFACES.
- MOTORIZED DRIVE UNIT IS MOUNTED OUTSIDE OF THE TANK.
- ROTATIONAL SPEED OF THE NOZZLE TURRET IS INDEPENDENT OF THE CLEANING LIQUID PRESSURE AND FLOW.
- FOR TANK DIAMETERS UP TO APPROXIMATELY 80 FT. (24.4 m), SEE DATA SHEET 72041.
- FOR SPECIFICATIONS AND ADDITIONAL INFORMATION, SEE DATA SHEETS: 290AG-1, PL290AG, AND CURRENT TANK WASH CATALOG.
- MAX PRESSURE: 250 PSI (17 bar); FLOW: 200 GPM (752 l/min); TEMP: 200° F (93° C).
- FILTER, REGULATOR/LUBRICATOR SUPPLIED WITH UNIT.
- WETTED PARTS ARE TEFLON®, TYPE 316 STAINLESS STEEL, AND EPR.
- CE CERTIFIED

HOW TO ORDER EXAMPLE:

AAE290AG6F-6-2+55.430-H13/4U-316S00350

--- SPECIFY NOZZLE SIZE & MATERIAL (SEE D.S. 290AG-1)

--- SPECIFY NUMBER OF NOZZLES 2 OR 4, * THIS WILL DETERMINE FLANGE SIZE.

--- SPECIFY EXTENSION LENGTH IN FEET.

--- FLANGE SIZE *

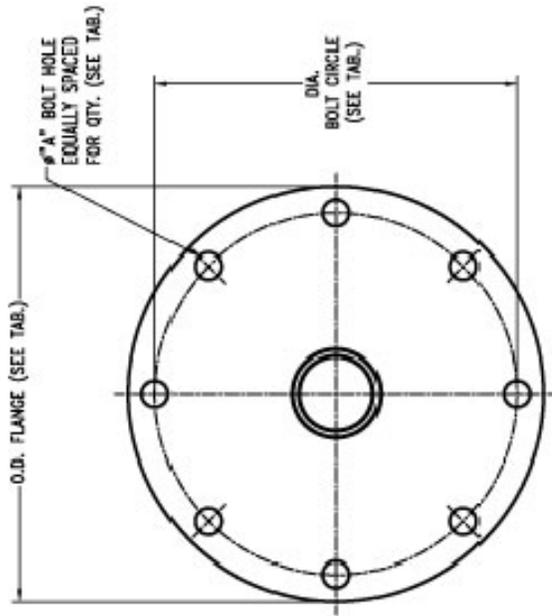
--- ADD "B" TO THE PART NO. FOR BSPT CONNECTIONS

DESCRIPTION: NO. AA 290AG F-- AIR MOTOR-DRIVEN TANK WASHER

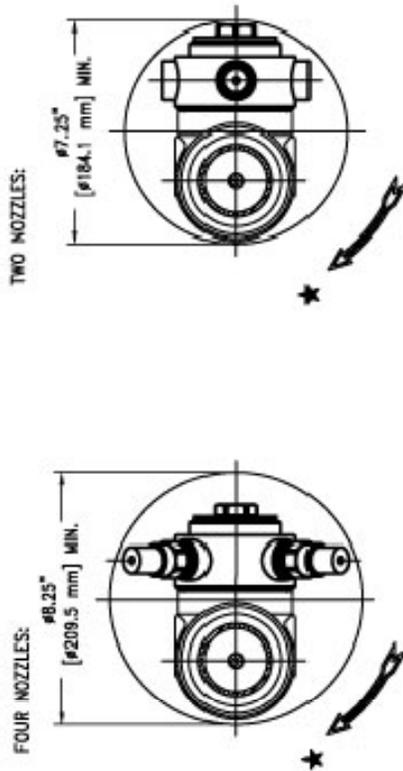
Spraying Systems Co.®
Spray Nozzles and Accessories
P.O. Box 7900 - Wheaton, IL 60185-7900

Rev. No. 3	Data Sheet No. 290AG	
Ref.	SHEET	OF

MOTOR END VIEW OF INLET BODY MOUNTING FLANGE



SPRAY HEAD TANK DIAMETER OPENING REQUIREMENTS



★ DIRECTION OF ROTATION IS VERY IMPORTANT. NOZZLE HUB MUST ROTATE AS INDICATED.

FLOW RATE DATA

NOZZLE	THEORETICAL AVG. TOTAL FLOW OF 2 NOZZLES (EQUAL CAPACITY) GALLONS PER MINUTE (LITERS PER MINUTE)			
	50 (3.5)	100 (7)	150 (10)	200 (15)
55430-H3/4U-316SS00100	22 (83)	32 (121)	39 (148)	45 (170)
55430-H3/4U-316SS00200	45 (170)	63 (238)	77 (291)	89 (337)
55430-H3/4U-316SS00250	56 (212)	79 (299)	97 (367)	112 (424)
55430-H3/4U-316SS00350	78 (295)	111 (420)	136 (515)	157 (594)
55430-H3/4U-316SS00400	89 (337)	126 (477)	155 (587)	179 (678)

NOZZLE	THEORETICAL AVG. TOTAL FLOW OF 4 NOZZLES (EQUAL CAPACITY) GALLONS PER MINUTE (LITERS PER MINUTE)			
	50 (3.5)	100 (7)	150 (10)	200 (15)
55430-H3/4U-316SS00100	43 (163)	63 (238)	77 (291)	89 (337)
55430-H3/4U-316SS00200	89 (337)	126 (477)	155 (587)	178 (674)
55430-H3/4U-316SS00250	112 (424)	158 (598)	194 (734)	—
55430-H3/4U-316SS00350	157 (594)	—	—	—
55430-H3/4U-316SS00400	179 (678)	—	—	—

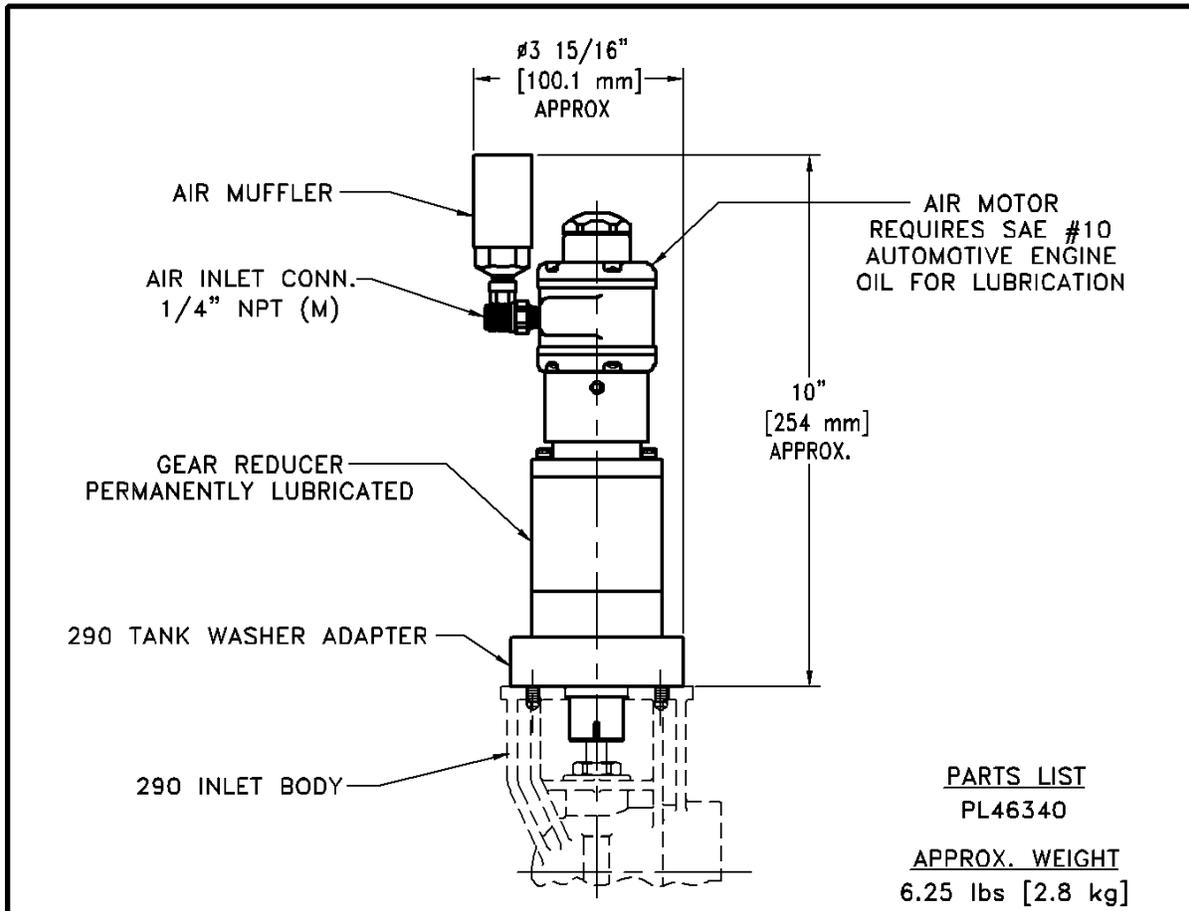
FLANGE PART NO.	O.D. DIA. OF FLANGE	DIA. OF BOLT HOLE CIRCLE	NO. OF BOLT HOLES	#A
56265-8F-SS	#13.5	#11.75	8	.88
56265-10F-SS	#16.0	#14.25	12	1.00

MOTOR-DRIVEN TANK WASHER No.	EXTENSION LENGTH	WEIGHT
AA_290AG8F-3-	3' (0.9 m)	56 LBS. (25.5 kg)
AA_290AG8F-4-	4' (1.2 m)	60 LBS. (27.3 kg)
AA_290AG8F-6-	6' (1.8 m)	89 LBS. (40.4 kg)
AA_290AG10F-3-	3' (0.9 m)	63 LBS. (28.7 kg)
AA_290AG10F-4-	4' (1.2 m)	67 LBS. (30.5 kg)
AA_290AG10F-6-	6' (1.8 m)	76 LBS. (34.6 kg)

DESCRIPTION:
 SPECIFICATIONS FOR
 No. AA_290AG_F-
 AIR MOTOR-DRIVEN TANK WASHER

Spraying Systems Co.
 Spray Nozzles and Accessories
 P.O. Box 7900 - Wheaton, IL 60189-7900

Rev. No. 4
 Ref.
 Delta Sheet No.
290AG-1
 SHEET OF



AIR PRESSURE AT MOTOR		APPROX. SPEED (RPM)		AIR CONSUMPTION		TIME FOR ONE COMPLETE CYCLE (MINUTES)		REVOLUTIONS REQUIRED FOR 1 COMPLETE CYCLE
PSI	bar	50 PSI (3.45 bar)	250 PSI (17.24 bar)	SCFM	l/sec.	50 PSI (3.45 bar)	250 PSI (17.24 bar)	
12	0.83	6	2	4.7	2.2	11	32	61
14	0.97	8	4	5.4	2.5	7	17	
16	1.10	10	8	6.3	3.0	6	8	
18	1.24	--	9	7.1	3.4	--	7	

RPM AND CYCLE TIME VARY WITH LIQUID PRESSURE.

SEE DATASHEET 46340 FOR PERFORMANCE DATA OF THIS MOTOR ON A 090 & 190 TANKWASHER.

DESCRIPTION:

No. 46340- ___ AIR DRIVEN
 MOTOR ASSEMBLY
 FOR 290
 AIR MOTOR-DRIVEN
 TANK WASHERS



Spraying Systems Co.®

Spray Nozzles and Accessories
 P.O. Box 7900 - Wheaton, Il. 60189-7900

Rev. No.

Ref.

Data Sheet No.

46340-290

SHEET OF

SAFETY PRECAUTIONS

YOUR SAFETY AND THE SAFETY OF OTHERS IS EXTREMELY IMPORTANT.

WE HAVE PROVIDED IMPORTANT SAFETY MESSAGES IN THIS MANUAL FOR YOUR PRODUCT. ALWAYS READ AND OBEY ALL SAFETY MESSAGES.



THIS IS THE SAFETY ALERT SYMBOL. THIS SYMBOL ALERTS YOU TO HAZARDS THAT CAN KILL OR HARM YOU AS WELL AS OTHERS. THE SAFETY ALERT SYMBOL AND THE WORDS “DANGER” AND “WARNING” WILL PRECEDE ALL SAFETY MESSAGES. READ THE FOLLOWING WORDS AND WHAT THEY SIGNIFY:



DANGER

YOU MAY BE KILLED OR SERIOUSLY INJURED IF YOU DON'T FOLLOW THESE INSTRUCTIONS.



WARNING

YOU MAY BE SERIOUSLY INJURED IF YOU DON'T FOLLOW THESE INSTRUCTIONS.

ALL SAFETY MESSAGES WILL IDENTIFY THE HAZARD, TELL YOU HOW TO REDUCE THE CHANCE OF INJURY AND TELL YOU WHAT CAN HAPPEN IF THE SAFETY INSTRUCTIONS ARE NOT FOLLOWED.

INSTALLATION

Qualified personnel must perform all work required to assemble, install, operate, maintain and repair this equipment. Improper installation and operation can result in severe personal injury and/or damage to property. Correct installation is your responsibility.



WARNING

Install proper guards as needed. Follow basic lifting guides when transporting or handling this product. Failure to follow this instruction can result in back injury, burns or other serious injury.

CONNECTIONS

Please refer to datasheet 290AG during installation. Connect the air muffler (shipped loose) to the air motor exhaust connection. The exhaust connection is the threaded connection on the left as you face the motor openings. Connect the lubricator sub-assembly to the air inlet connection of the air motor. The inlet connection is the threaded connection on the right as you face the motor openings. Attach a compressed air line to the quick connect fitting of the pressure regulator and verify that the nozzle hub rotates clockwise when viewed from the nozzle hub end by applying air pressure to the motor. Connect the liquid line to the inlet connection of the liquid inlet body.

MOUNTING

Bolt or clamp the unit to the tank to be cleaned as dictated by the mounting flange provided. Adjustable flanges allow easy positioning of the tank wash unit to various spray depths for maximum cleaning effectiveness.

LIQUID INLET CONNECTION

Proper installation requires liquid supply line (pipe, hose, etc.) meet or exceed maximum working pressure. Use of PTFE Pipe Tape or other appropriate sealant compatible with your process fluids is highly recommended for leak free connections.



DANGER

Failure to install the tank washer with insufficient connections could result in leaks and/or explosion. If you do not follow these instructions, you may be killed or seriously injured.

MECHANICAL CLEARANCES

Proper installation requires that sufficient clearance be maintained between the rotary housing and nozzles of the tank wash unit and any internal baffles or the walls of the tank being cleaned.



DANGER

It is your responsibility to ensure that there is no possibility of the moving parts coming in contact with fixed objects. Failure to install the tank washer with sufficient clearances could result in the generation of sparks with a resultant explosion or fire. If you do not follow these instructions, you may be killed or seriously injured.

GROUNDING

A ground screw is provided on the Liquid Inlet Body marked with a ground symbol. A ground wire should be clamped under the screw head and connected to earth ground via an approved grounding method. Likewise, a ground wire should be affixed to the tank and terminated at an earth ground.



DANGER

It is not sufficient to ground only the tank washer or the tank itself because the electrical continuity between the tank wash unit and tank cannot be guaranteed. A separate ground connection from both the tank wash unit and the tank itself should be made. Failure to follow this instruction can result in buildup of static charge between the tank and the tank washer parts which could cause a sudden discharge of current with a resultant explosion or fire.

YOU MAY BE KILLED OR SERIOUSLY INJURED IF YOU DO NOT FOLLOW THESE INSTRUCTIONS.

HIGH IMPACT SPRAYS

This tank washer may be equipped with solid stream nozzles which concentrate the flow energy into a small area for maximum impact and cleaning efficiency. Operation at high pressure increases their effectiveness but also creates a hazard if the proper precautions are not followed.



WARNING

INJURY HAZARD FROM HIGH IMPACT SPRAYS.

High impact sprays can cause severe injury. The liquid pressure to the tank washer should never be turned on while the unit is outside the tank. ***Failure to follow this instruction can result in fluid penetration through clothing and into the human skin causing severe injury, possibly resulting in amputation or death.*** If any part of the body comes in contact with the spray stream, immediately consult a physician.

AIR MOTOR LUBRICATION

Use DETERGENT SAE #10 automotive engine oil. Consult with your local supplier of lubricants or contact your local Spraying Systems Co. sales office.

AUTOMATIC LUBRICATION

Inline air lubricator should be adjusted to feed 1 drop of oil per minute. Do not over-feed oil as contamination of exhaust air may result.

NOTE: THE AIR SOURCE MUST BE WATER-FREE AND PROPERLY LUBRICATED TO PREVENT RUST AND EXCESSIVE FRICTION FROM WEARING OUT THE MOTOR PREMATURELY. IF THE AIR MOTOR IS TAKEN CARE OF PROPERLY IT SHOULD LAST MANY CLEANING CYCLES BEFORE REPAIR OR REPLACEMENT IS NECESSARY.

OPERATION

IT IS YOUR RESPONSIBLY TO OPERATE THIS PRODUCT AT RECOMMENDED SPEEDS, LOADS AND TEMPERATURES.

Run the unit within the specified pressures and flow rates for the liquid and air motor to ensure safety. To maintain proper operations do not run the unit dry, always keep liquid flow on before stopping the air motor.



WARNING

Do not use combustible gases to drive the air motor. Sound level from motor may exceed 85db(A). Check compatibility of service fluid with materials used to construct this product. Use a pressure gauge to monitor liquid pressure (see 290AG-1 for flow rate data). Ensure that the pumping system has monitor controls and emergency shut off system in case of pressure spike which can cause harm to this product. Failure to follow this instruction can result in burns, eye injury or other serious injury.



DANGER

Spraying Systems Co. strongly recommends the use of appropriate safety equipment when working with potentially hazardous chemicals. See your chemical's MSDS sheet for all safety measures relating to your chemical.

This equipment includes but is not limited to:

- ❖ Protective hat
- ❖ Safety glasses or face shield
- ❖ Chemical-resistant gloves and apron
- ❖ Long sleeve shirt and long pants

ALWAYS REMEMBER TO CAREFULLY READ THE CHEMICAL MANUFACTURER'S LABEL AND FOLLOW ALL DIRECTIONS.

MAINTENANCE

IT IS YOUR RESPONSIBILITY TO REGULARLY INSPECT AND MAKE NECESSARY REPAIRS TO THIS PRODUCT IN ORDER TO MAINTAIN PROPER OPERATION. IT IS RECOMMENDED THAT THE BUSHINGS AND SEALS BE INSPECTED EVERY 1000 HOURS OF OPERATION OR SOONER IF EXCESSIVE LEAKAGE OF THE SEALS OCCURS.

REMOVAL AND REPLACEMENT OF SPRAY NOZZLES (ITEM 21 ON PARTS LIST DRAWING PL 290AG)

Make sure the unit is completely disconnected from the air source before attempting to service nozzles.

1. Unscrew Spray nozzles (21) from nozzle hub (20) and inspect for plugging and wear
2. If a nozzle is plugged or partially plugged, clean out the orifice and inlet area with a wooden toothpick or other relatively soft probe. Screwdrivers, wire or other hard metal items should not be used since they may scratch and severely damage the orifice.
3. If the nozzles need replacement, obtain new nozzles.
4. Replace spray nozzles (21) in nozzle hub (20) by tightly screwing them in.

REMOVAL AND REPLACEMENT OF NOZZLE HUB BUSHINGS (ITEM 13 ON PARTS LIST PL 290AG)

1. Unscrew (clockwise-left hand thread) rotary housing plug (22), and slide nozzle hub bushings (15) and nozzle hub (20) off the rotary housing (14).
2. Remove any foreign material from nozzle hub gear teeth.
3. To replace parts, slide one nozzle hub bushing (15) over the tube of rotary housing (14) up to the shoulder.
4. Insert second nozzle hub bushing (15) into nozzle hub (20) and push nozzle hub onto rotary housing tube.
5. Apply Loctite 243 or 242 to threads of rotary housing plug (22) and screw (counterclockwise) into rotary housing (14) until it seats firmly.
6. Torque to 150 lb-ft (203 Nm).

REMOVAL OF #46340 AIR MOTOR DRIVE (SEE PARTS LIST DRAWING PL 46340)

1. First make sure the unit is completely disconnected from the air source.
2. Using a 3/16" Allen Wrench, unscrew and remove both the 1/4 - 20 socket head cap screws (5) and respective spring lock washers (4). You should now be able to lift the air motor drive completely off the liquid inlet body leaving the aluminum (3) attached to the 46340-290 air motor drive assembly.
3. The two M5 socket head cap screws (1) and respective spring washers (2) can then be unscrewed and removed using a 4 MM Allen Wrench.

REMOVAL/REPLACEMENT OF AIR MOTOR DRIVE COUPLING (ITEM 8 ON PARTS LIST PL 46340)

1. If it is necessary to remove the coupling (8) from the gear motor sub-assembly (14) shaft, tap the coupling with a rubber or plastic MALLETT until it releases from the shaft.
2. To reassemble, align the keyway on the coupling (8) with the key (9) on the gear motor sub-assembly (14) shaft and lightly tap the coupling (8) until it bottoms on the shaft.

NOTE: THE COUPLING (8) ON THE GEAR MOTOR SUB-ASSEMBLY (14) SHAFT HAS A PRESS FIT SO THE COUPLING (8) DOES NOT INADVERTENTLY COME APART DURING REMOVAL OR INSTALLATION OF THE GEAR MOTOR SUB-ASSEMBLY.

REMOVAL/REPLACEMENT OF O-RING (6) (ON PARTS LIST PL 290AG)

1. If it has not already been done, the air motor sub-assembly should be removed as described in the removal of #46340 air motor drive section above.
2. Next, tap out the groove pin (9), unscrew the upper shaft seal body sub-assembly (2) and slide off the shaft (10). Remove gasket (3) from shaft (10).
3. O-ring (6) is a seal between flange and hub welding sub-assembly (8) and extension tube (11) to prevent blow back from exiting the tank being cleaned. It is unlikely that this static seal will need replacement, but there is the possibility that adjustment of the flange up and down extension tube (11) may, in time, cause it to leak.
4. To remove and replace O-ring (6), securely clamp inlet body (5) or extension tube (11) in a vise and unscrew from each other.
5. Loosen the three set screws (7) and slide the flange assembly (8) off extension tube (11).
6. Replace O-ring (6) and reassemble flange onto extension tube (11). Apply Loctite 243 or 242 to threads of extension tube (11) and join to inlet body (5). Torque to 200 lb-ft (271nm).

REPLACEMENT OF UPPER SHAFT SEAL BODY SUB-ASSEMBLY (2), GASKET (3), SPLIT BUSHING (13), ROTARY HOUSING BUSHING (15), SHAFT BUSHING (17) AND O-RING(23) ON PARTS LIST PL 290AG

1. With the air motor (1), groove pin (9), shaft seal body sub-assembly (2), and gasket (3) removed in the previous step, note the position of drive link (18) tabs relative to rotary housing (14).
2. Remove drive link retaining screw (19), drive link (18) and lower bushing retainer (16) from unit.
3. Slide the rotary housing assembly (14) with its bushing (15) and split bushing (13) off the bevel gear sub-assembly (12).
4. Remove any foreign material from the bevel gear teeth.
5. Remove worn bushing (15) and split bushing (13) from the rotary housing (14).
6. Remove worn shaft bushing (17) and O-ring (23) from the lower bushing retainer (16) and replace with new parts.
7. Inspect shaft for wear and replace shaft if worn.
8. Reassemble the unit by first installing the split bushing (13) nearest the bevel gear sub-assembly (12).
9. Holding split bushing (13) in place, slide rotary housing (14) over split bushing.
10. Install bushing (15) into rotary housing (14).
11. Apply Loctite 243 or 242 to threads of the lower bushing retainer (16) and carefully push and rotate over shaft (10) and into bevel gear sub-assembly (12).
12. Tighten lower bushing retainer and torque to 150 lb-ft (203 nm).
13. Reinstall drive link (18) with tabs in the same position noted earlier.
14. Apply Loctite 243 or 242 to threads of retainer screw (19) and screw into shaft (10). Torque to 7 lb-ft (9.5 nm).
15. Inspect O-rings inside the upper shaft seal body sub-assembly (2) and replace with new sub-assembly and gasket (3) if damaged or worn.
16. Install gasket (3) onto shaft (10).
17. Apply Loctite 243 or 242 to threads of upper shaft seal body sub-assembly (2) and reassemble onto shaft (10) by slowly rotating it as you slide it onto the shaft and position it to be screwed into the unit. This procedure will help prevent damage to the shaft seals inside.
18. Screw in upper shaft seal body sub-assembly (2) until tight and torque to 60 lb-ft (81 nm).
19. Complete the reassembly by installing the groove pin (9) into shaft (10).

REPLACEMENT OF #46340 AIR MOTOR DRIVE (SEE PARTS LIST DRAWING PL 46340)

1. Position the 290 Aluminum adapter (3) so the through holes for the M5 socket head cap screws (1) align with the threaded inlet holes in the gear motor sub-assembly (14).
2. Secure the aluminum adapter (3) to the gear motor sub-assembly (14) with the M5 socket head cap screws (1) and the respective spring lock washers (2) by using a 4 MM Allen Wrench.
3. If it is not already attached, align the keyway on the coupling (8) with the key (9) on the gear motor sub-assembly (14) shaft and lightly tap the coupling (8) until it bottoms on the shaft.
4. Insert the coupling (8) through the hole in the top of the 290 inlet casting.
5. The slot on the coupling (8) should be aligned and indexed over the groove pin an drive shaft on the 290 assembly.
6. The air motor drive assembly can now be rotated until the through holes in the aluminum adapter (3) align with the 1/4 - 20 holes in the liquid inlet body.
7. Using a 3/16" Allen Wrench, secure the 290 adapter (3) to the liquid inlet body using two 1/4 – 20 socket head cap screws (5) and spring lock washers (14).

BEFORE RE-INSTALLING IN A TANK, CONNECT AN AIR LINE TO THE AIR MOTOR DRIVE TO MAKE SURE THE UNIT WORKS PROPERLY.

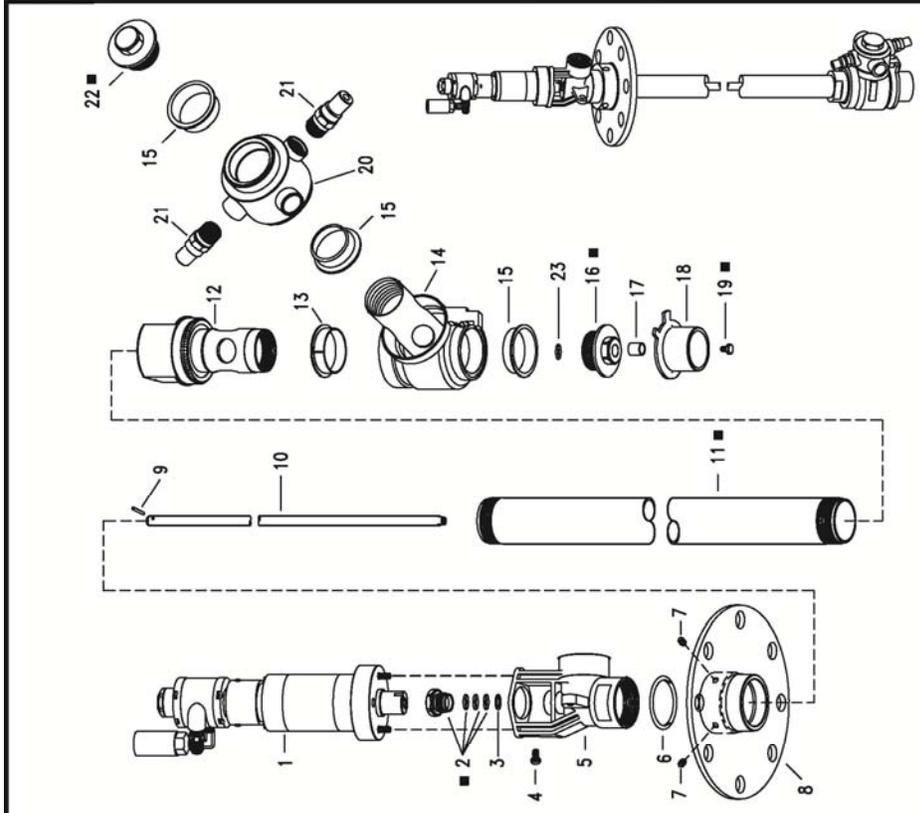
PART LISTS

ITEM	PART NO.	DESCRIPTION
1	46340-290-EPR	Air Motor Drive Assembly, CE Certified
2	23687-316EPR	Upper Shaft Seal Body Sub-Assembly, Type 316 Stainless Steel & Ethylene Propylene Rubber
3	CP56356-NY	Gasket, Nylon
4	CP55000-3-316SS	Screw, Type 316 Stainless Steel
5	CP23642-SS	Inlet Body, Stainless Steel (2" N.P.T. Conn.)
6	CPB23642-SS	Inlet Body, Stainless Steel (2" B.S.P.T. Conn.)
7	CP7717-2-332-EPR	O-Ring, Ethylene Propylene Rubber
8	CP23668-SS	Set Screw, Stainless Steel (3 Req'd)
9	CP56260-9F-316L	Flange & Hub Welding Sub-Assembly, Type 316L Stainless Steel, For AA_290AG8F_-2
10	CP56260-10F-316L	Flange & Hub Welding Sub-Assembly, Type 316L Stainless Steel, For AA_290AG8F_-4
11	58265-8F-SS-CE	Adjustable Flange Sub-Assembly, Stain. Stl. (includes items 5, 6 & 7) For AA_290AG8F_-2
12	58265-10F-SS-CE	Adjustable Flange Sub-Assembly, Stain. Stl. (includes items 5, 6 & 7) For AA_290AG8F_-4
13	CP23656-SS	Groove Pin, Stainless Steel
14	CP23660_-316SS	Shaft, Type 316 Stainless Steel
15	CP23661_-316SS	Extension Tube, Type 316 Stainless Steel
16	CP23667-316SS	Bevel Gear Sub-Assembly, Type 316 Stainless Steel
17	CP23679-1-CGRTEF	Split Bushing, Carbon Graphite Filled TEFLON®
18	CP23644-SS	Rotary Housing, Stainless Steel
19	CP23679-CGRTEF	Bushing, Carbon Graphite Filled TEFLON® (3 Req'd)
20	CP23663-1-316SS	Lower Bushing Retainer, Type 316 Stainless Steel
21	CP23658-CGRTEF	Shaft Bushing, Carbon Graphite Filled TEFLON®
22	CP23649-316SS	Drive Link, Type 316 Stainless Steel
23	CP19107-316SS	Screw, Type 316 Stainless Steel
24	CP23647-2-SS	Nozzle Hub, Stainless Steel, 2 Nozzles, For AA_290AG8F_-2
25	CP23647-4-SS	Nozzle Hub, Stainless Steel, 4 Nozzles, For AA_290AG10F_-4
26	55430-H34U-316SS00	Spray Nozzle, Solid Stream VeeJet Nozzle With Stabilizer Vane, Type 316 Stainless Steel (2 or 4 Req'd)
27	CP23664-316SS	Rotary Housing Plug, Type 316 Stainless Steel
28	CP7717-10-EPR	O-Ring, Ethylene Propylene Rubber
29	No. AA290AG8F_-2	Air Motor-Driven Tank Washer with 2 Nozzles
30	No. AA290AG10F_-4	Air Motor-Driven Tank Washer with 4 Nozzles
31	No. AAB290AG8F_-2	Air Motor-Driven Tank Washer with 2 Nozzles (BSPT Version)
32	No. AAB290AG10F_-4	Air Motor-Driven Tank Washer with 4 Nozzles (ESPT Version)

The No. 21030 LUBRICATOR ASSEMBLY (SEE PL 21030) IS SUPPLIED WITH EACH AA_290AG_F_...
 * The No. AB290AG-KIT Spare Parts Kit (includes all items marked with *)

ITEM NO.	TORQUE REQUIREMENTS		LOCTITE ADHESIVE	
	POUND FORCE-FT.	NEWTON METER	TYPE USED	TYPE USED
2	80 LBF-FT.	81 N.m	243 OR 242	
11	200 LBF-FT.	271 N.m	243 OR 242	
16	150 LBF-FT.	203 N.m	243 OR 242	
19	7 LBF-FT.	9.5 N.m	243 OR 242	
22	150 LBF-FT.	203 N.m	243 OR 242	

■ NOTE: SEE TORQUE REQUIREMENTS AND LOCTITE NOTES FOR REASSEMBLY OF THESE PARTS



DESCRIPTION:

No. AA290AG_F_- &
 No. AAB290AG_F_-
 AIR MOTOR-DRIVEN TANK WASHER
 (WITH 2 OR 4 NOZZLES)

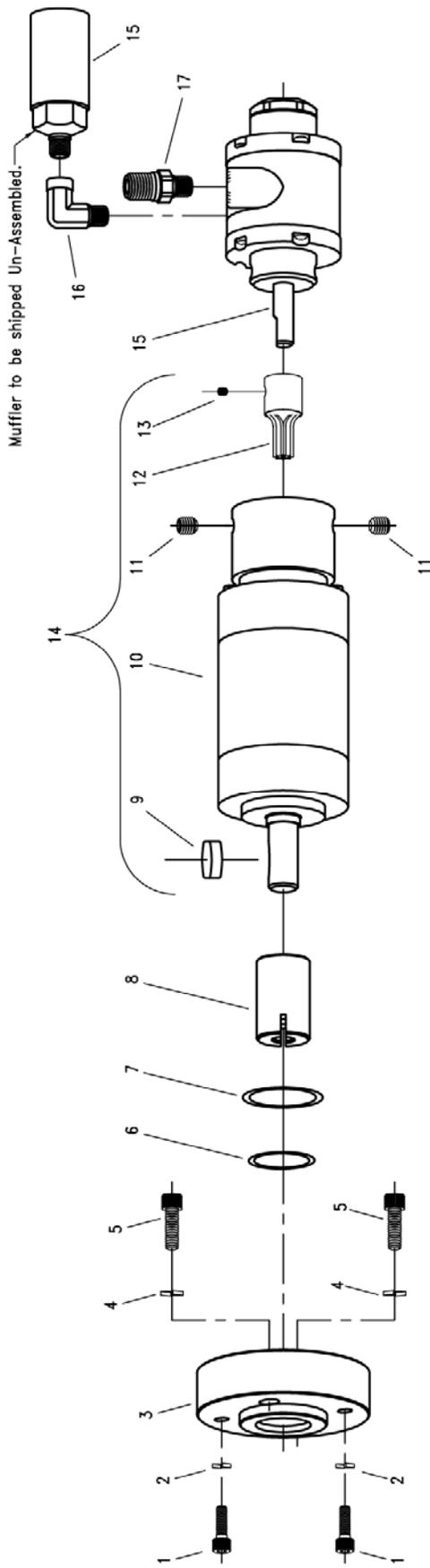
Parts List No.
PL 290AG

Rev. No. 7

Ref.

SHEET OF

Spraying Systems Co.
 Spray Nozzles and Accessories
 P.O. Box 7900 - Wheaton, IL 60189-7900



Muffer to be shipped Un-Assembled.

INCLUDED TOOLS:

- 3/16" Hex Allen Wrench For Item 5 (1/4-20 Socket Head Cap Screw)
- 2 mm Hex Allen Wrench For Item 13 (M4 Set Screw)
- 4 mm Hex Allen Wrench For Item 1 (M5 Socket Head Cap Screw) & Item 11 (M8 Set Screw).

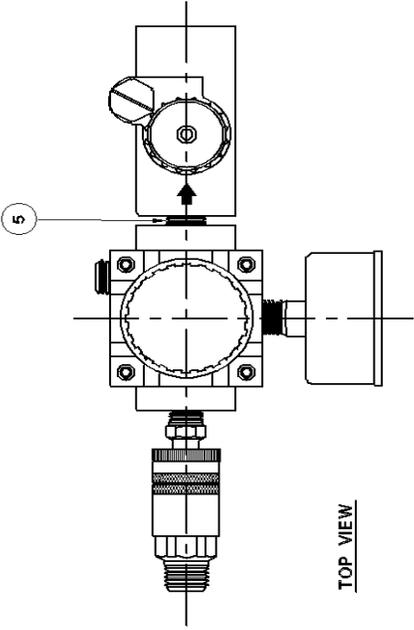
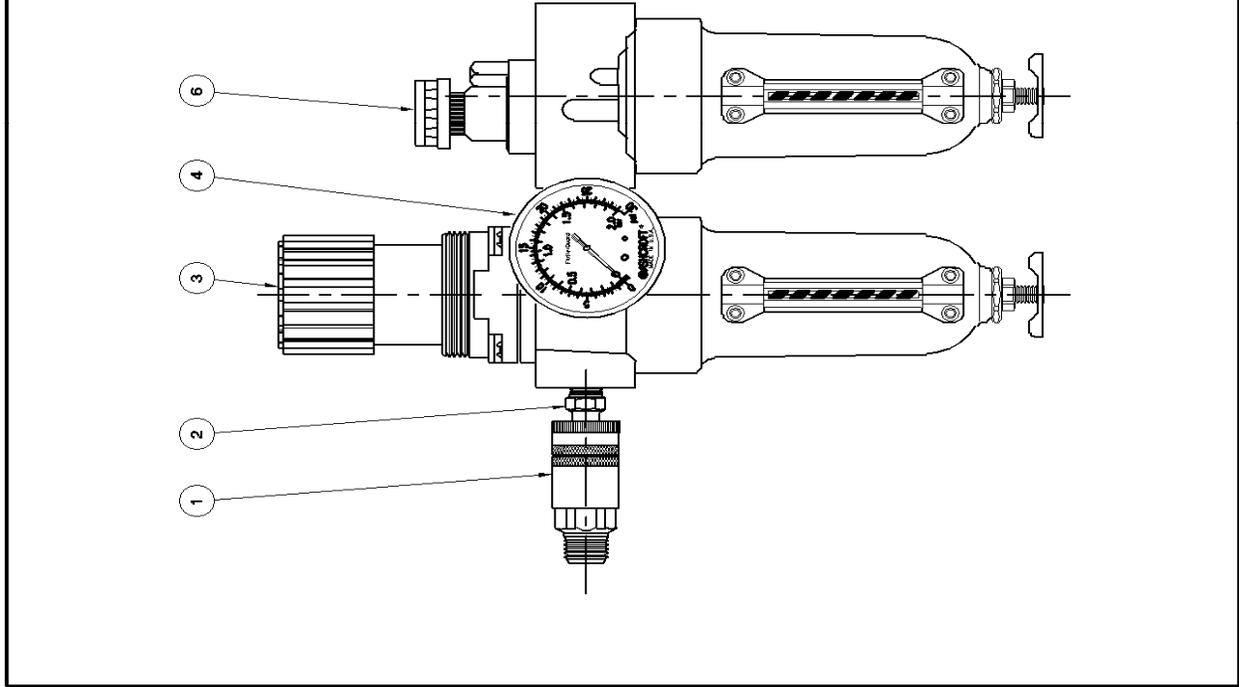
ITEM	PART NO.	DESCRIPTION
1	CP46766-20-316SS	Metric Socket Head Cap Screw, M5 x 0.8 x 20 mm LG. Type 316 Stainless Steel (2 REQ'D)
2	CP46352-5-316SS	Metric Spring Washer, 5 mm, Stainless Steel Type 316 (2 REQ'D)
3	CP46345-290-AL	290 Adapter, Aluminum (For Model #AA290AG--)
4	CP46353-SS	Spring Washer, 1/4", Stainless Steel Type 18-8 (2 REQ'D)
5	CP26197-1/2-SS	Socket Head Cap Screw, 1/4-20 x 1/2 LG. Type 18-8 Stainless Steel (2 REQ'D)
6	CP7717-2-214-VI	O-Ring, VITON®
7	CP7717-2-124-VI	O-Ring, VITON®
8	CP46343-290-316SS	Coupling, 316 Stainless Steel (For Model #AA290AG--)
9	CP46349-4-IB0	Metric Key, 5 mm Thick, Steel
10	CP46342	Gear Motor
11	CP46344-8-IB0	Metric Set Screw, Cup Point, M8 x 1.25 x 8 mm LG. Alloy Steel, Black Oxide Coating (2 REQ'D)
12	CP46347-1	Motor Pinion, Steel
13	CP46346-4-IB0	Metric Set Screw, Cup Point, M4 x 0.7 x 4 mm LG. Alloy Steel, Black Oxide Coating
14	46351	Gear Motor Sub-Assembly (Consists Of The Following Items 9, 10, 11, 12, & 13)
15	46350	Air Motor, Gast 1UP-NRV-10 & Air Motor Muffer, Gast AF350, CE Certified
16	CP38674-7	90° Street Elbow, 1/8 NPT (M) x 1/8 NPT (F), Brass
17	CP26396-1	Hex Pipe Nipple, 1/4 NPT (M) x 1/8 NPT (M), Brass
No. 46340-290 Air Motor Assembly (For Model #AA290AG--)		

DESCRIPTION:
 No. 46340-290
 Air Motor-Driven Assembly

Spraying Systems Co.®
 Spray Nozzles and Accessories
 P.O. Box 7900 - Wheaton, IL 60187-7901

Parts List No. **PL 46340-290**
 Rev. No. _____ SHEET OF _____

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TOP VIEW

ITEM	PART NO.	DESCRIPTION
1	CP22023	Coupler, Brass
2	CP22024-1	Coupler Nipple, Steel
3	CP22025	Filter / Regulator
4	26383-1/4-30	Gauge
5	CP7998-7/8	Close Nipple, Brass
6	CP22027	Lubricator
No. 21030 Lubricator Assembly		

DESCRIPTION:
No. 21030 LUBRICATOR ASSEMBLY

Spraying Systems Co.
 Spray Nozzles and Accessories
 P.O. Box 7900 - Wheaton, IL 60189-7900

Rev. No. 1
 Ref.

Parts List No.
PL 21030
 SHEET OF

WARRANTY

SPRAYING SYSTEMS CO. WARRANTY

Seller warrants that its products will conform to and perform in accordance with the products' specifications. Seller warrants that the products do not infringe upon any copyright, patent or trademark. The foregoing warranties are in lieu of all other warranties, expressed or implied, including, but not limited to, those concerning merchant ability and fitness for a particular purpose.

Because of the difficulty of ascertaining and measuring damages hereunder, it is agreed that, except for claims for bodily injury, Seller's liability to the Buyer or any third party, for any losses or damages, whether direct or otherwise, arising out of the purchase of product from Seller by Buyer shall not exceed the total amount billed and billable to the Buyer for the product hereunder. In no event will seller be liable for any loss of profits or other special or consequential damages, even if seller has been advised of the possibility of such damages.

EC DECLARATION OF CONFORMITY

We, **Spraying Systems Co.[®]**

North Avenue and Schmale Road, P.O. Box 7900,
Wheaton, IL 60187-7901

Tel: 1.800.95.SPRAY

Intl. Tel: 1.630.665.5000

Fax: 1.888.95.SPRAY

Intl. Fax: 1.630.260.0842

Visit our Website at <http://www.spray.com> for local representatives

in accordance with the following directive(s):

2006/42/EC The machinery directive

hereby declare that:

Equipment Tank Cleaning Devices
Model number AA290AG, AA290AG-1, 46340-290

is in conformity with the applicable requirements of the following documents:

<u>Ref. no.</u>	<u>Title</u>	<u>Edition/Date</u>
EN 982	Safety requirements for fluid power systems and their components – Hydraulics	1996
EN12100-1	Safety of machinery – Basic concepts, general principles for design: Part 1: Basic terminology, methodology	2003
EN12100-2	Safety of machinery – Basic concepts, general principles for design: Part 2: Technical principles	2003
EN ISO 14121-1	Safety of machinery – Risk assessment Part 1: Principles	2007
ASME- B31.1	ASME Boiler and Pressure Vessel Code	2001

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all applicable essential requirements of the directives.

Signed by:



Robert J. Adams, P.E.
Director of Engineering-Industrial Division
Spraying Systems Co.



Spraying Systems Co.[®]
Experts in Spray Technology



Spray
Nozzles



Spray
Control



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Analysis



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