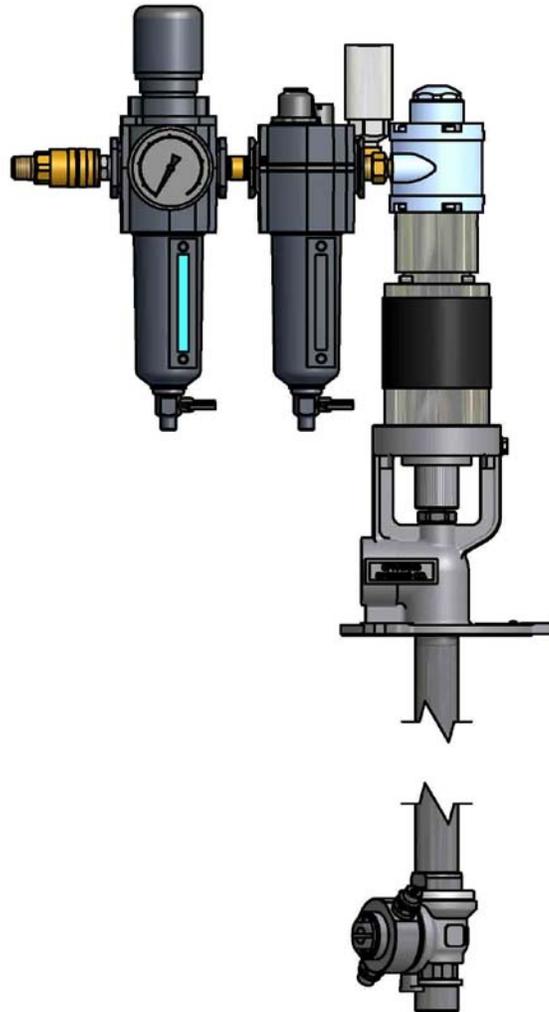


Spraying Systems Co.[®]

Experts in Spray Technology

AA190AG/AGH SERIES AIR MOTOR-DRIVEN TANK WASHER



OWNER'S MANUAL

MI-AA190AG/AGH

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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: 500 psi (35 bar) max for AA190AG
1000 psi (69 bar) max for AA190AGH
- Flow Rates: up to 20 gpm (76 l/m)
- Pressure Drop at Max. Flow: 40 psi (2.8 bar)
- Liquid Temperature: 200 degrees f (93 degrees c) max.
- Air Pressure to Motor: 10 psi (0.69 bar) max.
- Ambient Temperature: 104 degrees f (40 degrees c) max.
- Tank Diameter:
For AA190AG 25 feet (7.6 m) max recommended
For AA190AGH 34 feet (10.4 m) max recommended
- Spray head and nozzles fit through a 3 ¾" (95 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.

THE AA190AG-- AIR MOTOR-DRIVEN TANK WASHER PROJECTS CLEANING SOLUTION IN CONCENTRATED HIGH IMPACT, **SOLID STREAM** SPRAYS...WITH ROTATING MOTION THAT COVERS ALL INTERNAL SURFACES OF THE TANKS. SLOW, CONTROLLED ROTATIONAL SPEEDS OF THE ROTATING HOUSING AND NOZZLE TURRET PROVIDE A THOROUGH CLEANING ACTION ON THE TANK SURFACE.

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

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

LIQUID INLET CONN.
1" NPT (F) or 1" BSPT (F)

MOUNTING FLANGE
(SEE DATA SHEET 190AG-1)

No. 43047-316SS BALL JOINT ASSEMBLY
(SEE DATA SHEET 43047)

ROTATING NOZZLE TURRET WITH SOLID STREAM WASHJET® NOZZLES (2 REQ'D) HARDENED STAINLESS STEEL 1/4" NPT(F) OR 1/4" BSPT(F)
(SEE INDUSTRIAL CATALOG AND DATA SHEET 15659)

ROTATING HOUSING

EXTENSION LENGTH

14" [355.6 mm] APPROX.

3 1/4" [83 mm]

3" [76.2 mm]

30°

30°

FEATURES:

- CAN BE PERMANENTLY INSTALLED OR USED AS A PORTABLE UNIT.
- NOZZLE TURRET WITH 2 SOLID STREAM NOZZLES IS GEAR DRIVEN TO GIVE FULL COVERAGE OF INTERNAL TANK SURFACES.
- ENTIRE DRIVING UNIT IS MOUNTED OUTSIDE OF THE TANK.
- FOR TANK DIAMETERS UP TO APPROXIMATELY 25 FT. (7.6 m).
- FOR SPECIFICATIONS AND ADDITIONAL INFORMATION, SEE DATA SHEET 190AG-1 AND CATALOG 15.
- MAXIMUM PRESSURE 500 PSI (35 bar) WITH CAPACITIES UP TO 20 GPM (75 l/min.)
- CE CERTIFIED UNIT.

HOW TO ORDER EXAMPLE:

AA190AG- B + B 1/4MEG-0030

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

SPECIFY EXTENSION LENGTH

SPECIFY NOZZLE SIZE & MATERIAL (SEE D.S. 190AG-1)

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

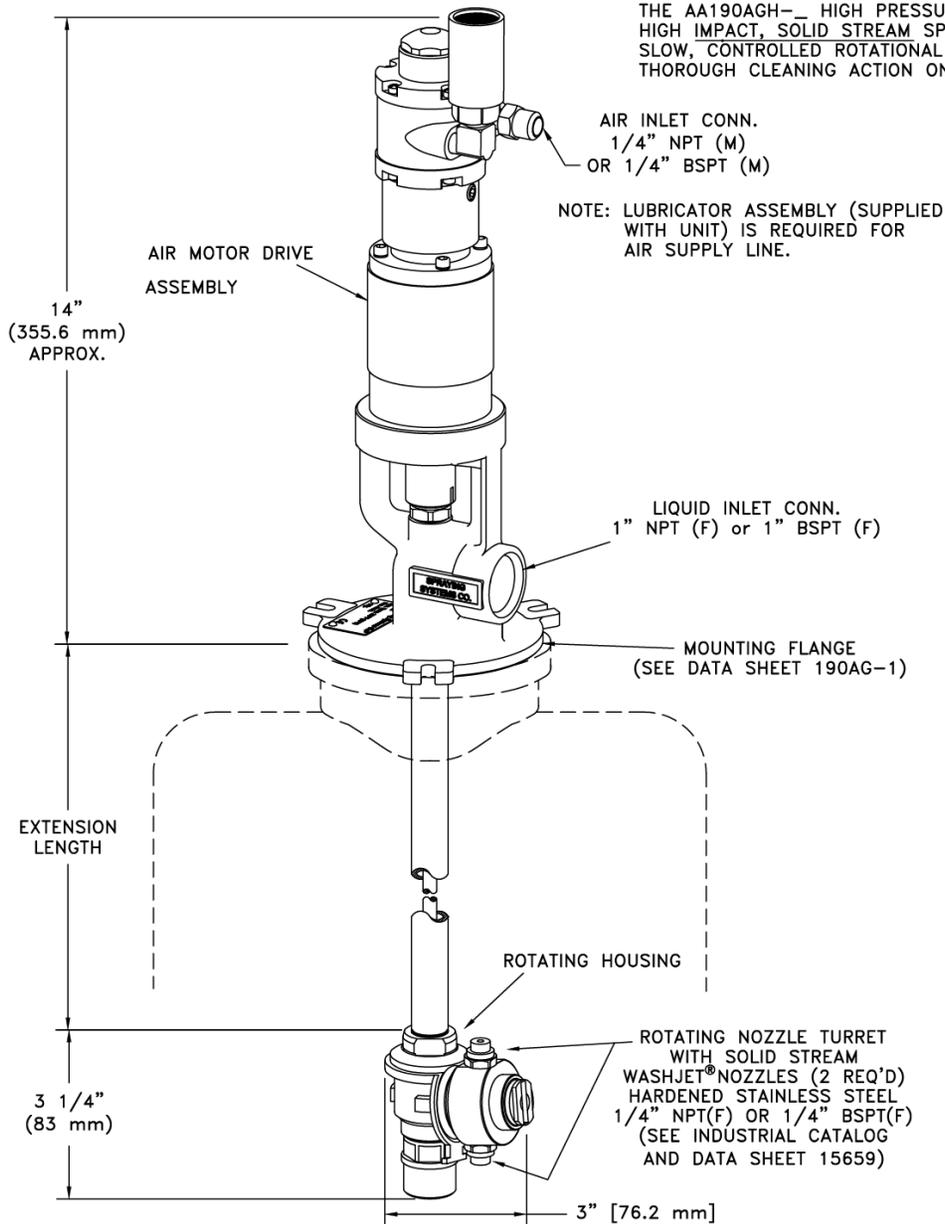
DESCRIPTION: No. AA190AG-- & No. AAB190AG-- AIR MOTOR-DRIVEN TANK WASHER		 Spraying Systems Co.® Spray Nozzles and Accessories P.O. Box 7900 - Wheaton, IL 60187-7901
Rev. No. 2	Data Sheet No. 190AG	
Ref.	SHEET OF	

© Spraying Systems Co.

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.

DATA SHEETS

THE AA190AGH-__ HIGH PRESSURE AIR MOTOR-DRIVEN TANK WASHER PROJECTS CLEANING SOLUTION IN CONCENTRATED HIGH IMPACT, SOLID STREAM SPRAYS...WITH ROTATING MOTION THAT COVERS ALL INTERNAL SURFACES OF THE TANKS. SLOW, CONTROLLED ROTATIONAL SPEEDS OF THE ROTATING HOUSING AND NOZZLE TURRET PROVIDE A THOROUGH CLEANING ACTION ON THE TANK SURFACE.



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

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

AIR MOTOR DRIVE ASSEMBLY

14"
(355.6 mm)
APPROX.

LIQUID INLET CONN.
1" NPT (F) or 1" BSPT (F)

MOUNTING FLANGE
(SEE DATA SHEET 190AG-1)

EXTENSION LENGTH

ROTATING HOUSING

3 1/4"
(83 mm)

ROTATING NOZZLE TURRET WITH SOLID STREAM WASHJET® NOZZLES (2 REQ'D) HARDENED STAINLESS STEEL 1/4" NPT(F) OR 1/4" BSPT(F) (SEE INDUSTRIAL CATALOG AND DATA SHEET 15659)

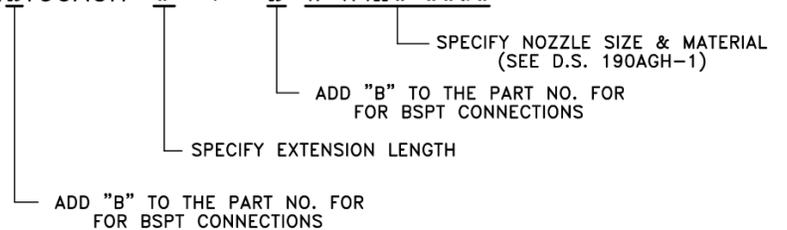
3" [76.2 mm]

FEATURES:

- CAN BE PERMANENTLY INSTALLED OR USED AS A PORTABLE UNIT.
- NOZZLE TURRET WITH 2 SOLID STREAM NOZZLES IS GEAR DRIVEN TO GIVE FULL COVERAGE OF INTERNAL TANK SURFACES.
- ENTIRE DRIVING UNIT IS MOUNTED OUTSIDE OF THE TANK.
- FOR TANK DIAMETERS UP TO APPROXIMATELY 34 FT. (10.4 m).
- FOR SPECIFICATIONS AND ADDITIONAL INFORMATION, SEE DATA SHEET 190AGH-1 AND CATALOG 15.
- FOR USE AT PRESSURES UP TO 1000 PSI (69 bar) AND CAPACITIES OF UP TO 20 GPM (75 l/min).
- CE CERTIFIED UNIT

HOW TO ORDER EXAMPLE:

AAE190AGH-6 + B 1/4MEG-0030



DESCRIPTION:

No. AA190AGH-__ & No. AAB190AGH-__
HIGH PRESSURE
AIR MOTOR-DRIVEN TANK WASHER



Spraying Systems Co.®

Spray Nozzles and Accessories
P.O. Box 7900 - Wheaton, IL 60187-7901

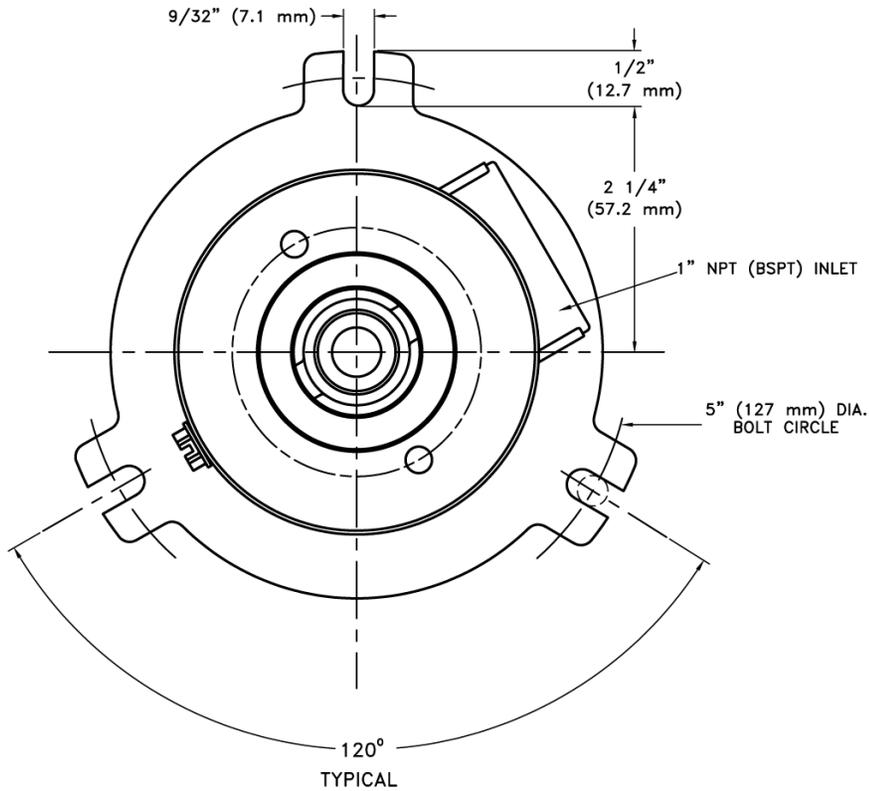
Rev. No. 2

Ref.

Data Sheet No.

190AGH

SHEET OF



MOTOR END VIEW OF INLET BODY MOUNTING FLANGE

SPECIFICATIONS

- MAXIMUM PRESSURE - 500 PSI (35 bar).
- MAXIMUM RECOMMENDED FLOW - 20 GPM (76 l/min).
- MAXIMUM LIQUID TEMPERATURE - 200°F (93°C).
- PRESSURE LOSS - 40 PSI (2.8 bar) AT 20 GPM (76 l/min).
- SPRAY HEAD FITS THROUGH A 3 3/4" (95 mm) DIAMETER HOLE.

FLOW RATE DATA

NOZZLE SIZE	U.S. UNITS					METRIC UNITS				
	TOTAL FLOW FOR 2 NOZZLES (EQUAL CAPACITY)									
	GALLONS PER MINUTE					LITERS PER MINUTE				
	LIQUID INLET PRESSURE (PSI)									
	100	200	300	400	500	LIQUID INLET PRESSURE (bar)				
						7	15	20	30	35
1/4MEG-0010	3.1	4.4	5.4	6.3	7.0	11.8	17.3	20	24	26
1/4MEG-0015	4.7	6.6	8.1	9.4	10.5	17.9	26	30	37	40
1/4MEG-0020	6.2	8.8	10.8	12.4	13.9	24	35	40	49	53
1/4MEG-0025	7.7	10.9	13.3	15.4	17.2	29	43	50	61	66
1/4MEG-0030	9.1	12.9	15.8	18.2	20.4	35	51	59	72	78
1/4MEG-0035	10.5	14.8	18.1	20.9		40	59	68	83	
1/4MEG-0040	11.8	16.7	20.4			45	66	76		
1/4MEG-0050	14.2	20.1				54	79			
1/4MEG-0060	16.4					63				
1/4MEG-0070	18.3					70				
1/4MEG-0080	19.9					76				

NOTE: FLOW RATES TABULATED ABOVE INCLUDE EFFECT OF PRESSURE DROP THROUGH UNIT.

DESCRIPTION:
FLOW AND MOUNTING SPECIFICATIONS FOR
No. AA190AG- & No. AAB190AG-
AIR MOTOR-DRIVEN TANK WASHER



Spraying Systems Co.

Spray Nozzles and Accessories
P.O. Box 7900 - Wheaton, IL 60187-7901

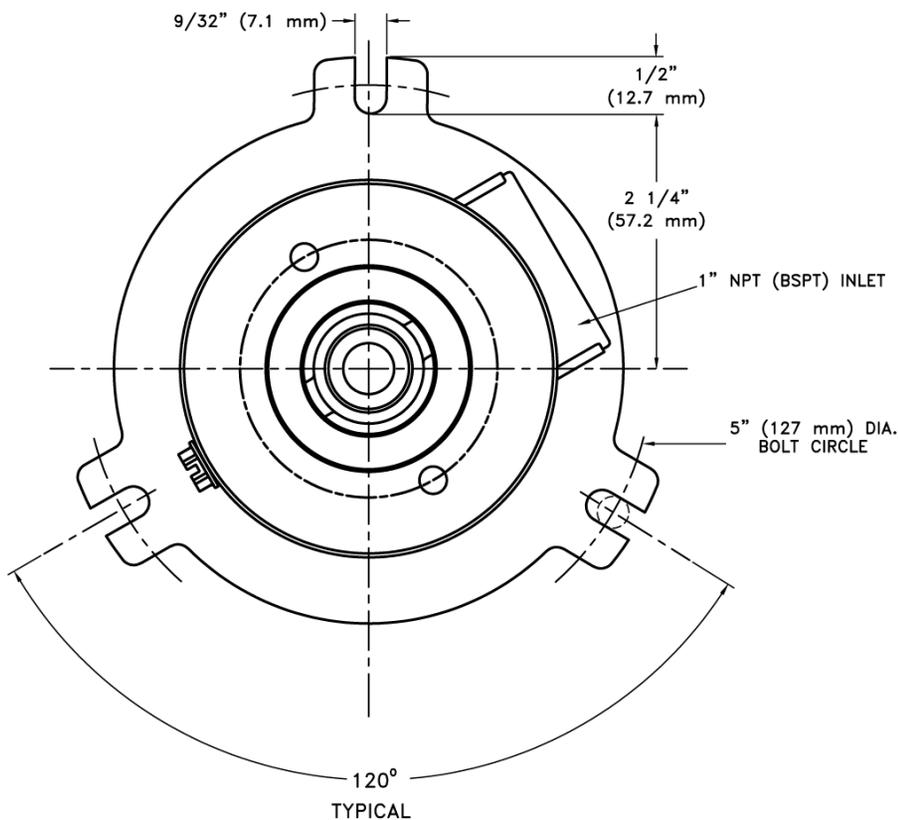
Rev. No. 2

Data Sheet No.

190AG-1

Ref.

SHEET OF



MOTOR END VIEW OF INLET BODY MOUNTING FLANGE

SPECIFICATIONS

- MAXIMUM PRESSURE - 1000 PSI (69 bar).
- MAXIMUM RECOMMENDED FLOW - 20 GPM (76 l/min).
- MAXIMUM LIQUID TEMPERATURE - 200°F (93°C).
- PRESSURE LOSS - 40 PSI (2.8 bar) AT 20 GPM (76 l/min).
- SPRAY HEAD FITS THROUGH A 3 3/4" (95 mm) DIAMETER HOLE.

FLOW RATE DATA

U.S. UNITS

NOZZLE SIZE	TOTAL FLOW OF 2 NOZZLES (EQUAL CAPACITY) GALLONS PER MINUTE									
	INLET PRESSURE (PSI)									
	100	200	300	400	500	600	700	800	900	1000
1/4MEG-0010	3.1	4.4	5.4	6.3	7.0	7.6	8.2	8.8	9.3	9.8
1/4MEG-0015	4.7	6.6	8.1	9.4	10.5	11.5	12.4	13.3	14.1	14.9
1/4MEG-0018	5.6	7.9	9.7	11.2	12.5	13.7	14.8	15.8	16.8	17.7
1/4MEG-0020	6.2	8.8	10.8	12.4	13.9	15.2	16.4	17.5	18.6	19.6
1/4MEG-0025	7.7	10.9	13.3	15.4	17.2	18.8	20.3	---	---	---
1/4MEG-0030	9.1	12.9	15.8	18.2	20.4	---	---	---	---	---
1/4MEG-0035	10.5	14.8	18.1	20.9	---	---	---	---	---	---
1/4MEG-0040	11.8	16.7	20.4	---	---	---	---	---	---	---
1/4MEG-0050	14.2	20.1	---	---	---	---	---	---	---	---
1/4MEG-0060	16.4	---	---	---	---	---	---	---	---	---
1/4MEG-0070	18.3	---	---	---	---	---	---	---	---	---
1/4MEG-0080	19.9	---	---	---	---	---	---	---	---	---

METRIC UNITS

NOZZLE SIZE	TOTAL FLOW OF 2 NOZZLES (EQUAL CAPACITY) LITERS PER MINUTE									
	INLET PRESSURE (bar)									
	7	15	20	30	35	40	50	55	60	70
1/4MEG-0010	11.8	17.3	20	24	26	29	32	34	35	38
1/4MEG-0015	17.9	26	30	37	40	43	48	50	52	57
1/4MEG-0020	24	35	40	49	53	57	63	66	69	75
1/4MEG-0025	29	43	50	61	66	70	78	---	---	---
1/4MEG-0030	35	51	59	72	78	---	---	---	---	---
1/4MEG-0035	40	59	68	83	---	---	---	---	---	---
1/4MEG-0040	45	66	76	---	---	---	---	---	---	---
1/4MEG-0050	54	79	---	---	---	---	---	---	---	---
1/4MEG-0060	63	---	---	---	---	---	---	---	---	---
1/4MEG-0070	70	---	---	---	---	---	---	---	---	---
1/4MEG-0080	76	---	---	---	---	---	---	---	---	---

NOTE: FLOW RATES TABULATED ABOVE INCLUDE EFFECT OF PRESSURE DROP THROUGH UNIT.

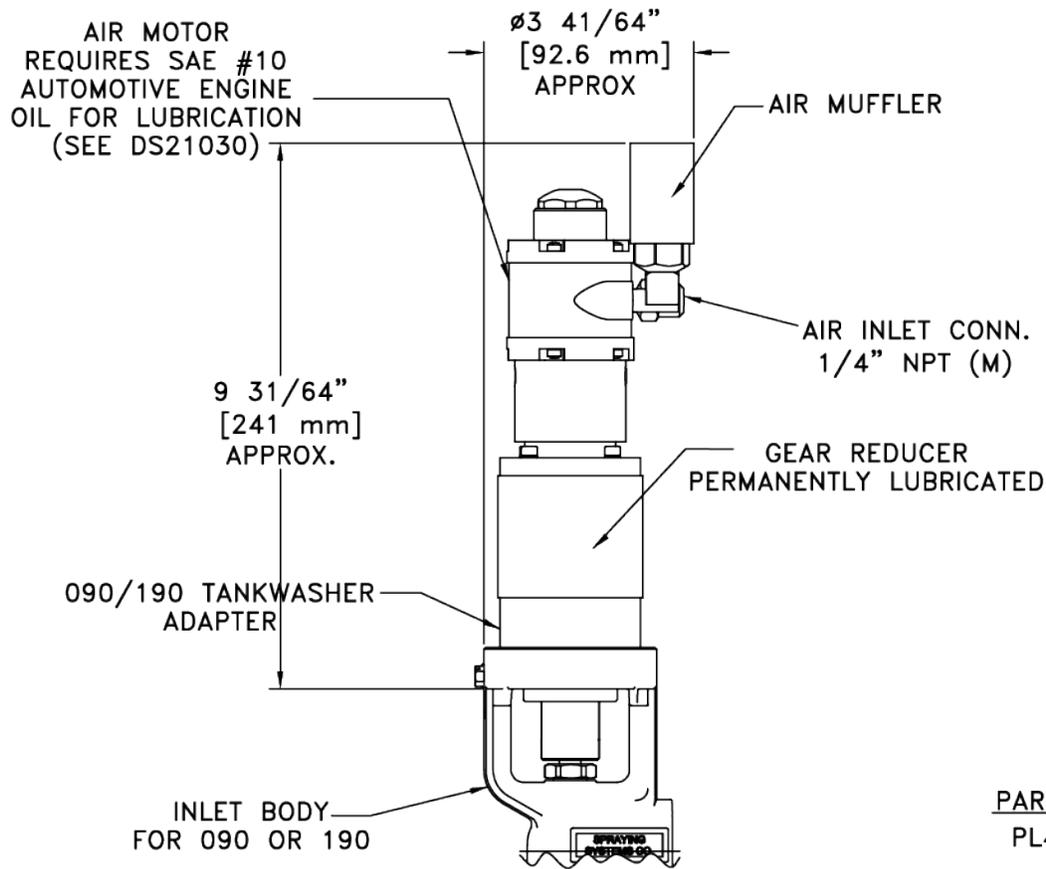
DESCRIPTION:
 FLOW RATE & MOUNTING SPECIFICATIONS FOR
 No. AA190AGH-- & No. AAB190AGH--
 HIGH PRESSURE
 AIR MOTOR-DRIVEN TANK WASHER



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

Rev. No. 3	Data Sheet No. 190AGH-1 SHEET OF
Ref.	





PARTS LIST
PL46340

APPROX. WEIGHT
6.25 lbs [2.8 kg]

AIR PRESSURE AT MOTOR		AIR CONSUMPTION		APPROX SPEED	APPROX TIME FOR ONE COMPLETE CYCLE IN MINUTES		REVOLUTIONS REQUIRED FOR 1 COMPLETE CYCLE	
PSI	bar	SCFM	l/min	RPM	090	190	090	190
5	0.34	1.4	39.6	3.2	10	11	31	35
7	0.48	2.0	56.6	6.0	5.5	6.0		
10	0.68	3.1	87.7	8.2	4.0	5.0		

SEE DATASHEET 46340-290 FOR PERFORMANCE DATA OF THIS MOTOR ON A 290 TANKWASHER.

DESCRIPTION:

No. 46340- --- AIR DRIVEN MOTOR ASSEMBLY FOR 090 OR 190 AIR MOTOR-DRIVEN TANK WASHERS



Spraying Systems Co.[®]

Spray Nozzles and Accessories
P.O. Box 7900 - Wheaton, IL 60187-7901

Rev. No. 5

Ref.

Data Sheet No.

46340

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

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 a 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 190AG-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 14 ON PARTS LIST DRAWING PL 190AG)

MAKE SURE THE UNIT IS COMPLETELY DISCONNECTED FROM THE AIR SOURCE BEFORE ATTEMPTING TO SERVICE NOZZLES.

1. Unscrew spray nozzles (14) from nozzle hub (16) 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.
 - A. If the nozzles need replacement, obtain new nozzles.
3. Replace spray nozzles (14) in nozzle hub (16) by tightly screwing them in.

REMOVAL AND REPLACEMENT OF NOZZLE HUB BUSHINGS (ITEM 13 ON PARTS LIST PL 190AG)

1. Unscrew (clockwise-left hand thread) rotary housing plug (15), and slide nozzle hub bushings (13) and nozzle hub (16) off the rotary housing (12).
2. Remove any foreign material from nozzle hub gear teeth.
3. To replace parts, slide one nozzle hub bushing (13) over the tube of rotary housing (12) up to the shoulder.
4. Insert second nozzle hub bushing (13) into nozzle hub (16) and push nozzle hub onto rotary housing tube.
5. Apply Loctite 243 or 242 to threads of rotary housing plug (15) and screw (counterclockwise) into rotary housing (12) until it seats firmly.
6. Torque to 20 lb-ft (27 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 4 mm Allen Wrench, unscrew and remove both 5 mm socket head cap screws (1) and respective spring washers (2).
3. You should now be able to lift the air motor drive completely off the aluminum adapter (3), leaving the aluminum adapter attached to the 190 inlet casting.

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 mallet 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 OF THE UPPER SHAFT SEAL BODY SUB-ASSEMBLY (2) AND LOWER BUSHING RETAINER SUB-ASSEMBLY (17) ON PARTS LIST PL 190AG)

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 (7), unscrew the upper shaft seal body sub-assembly (2) and slide off the shaft (8).
3. Remove gasket (4) from shaft (8).

4. Now unscrew the 5/16" hex head cap screw (20), remove the lower screw shield (19) and drive link (18).
5. Unscrew the lower bushing retainer sub-assembly (17) and slide off the shaft (8).
6. Pull the rotary housing (12) and gear tube bushings (11) off the bevel gear sub-assembly (10).
7. Inspect o-rings inside the upper shaft seal body sub-assembly (2) and seals inside lower bushing retainer sub-assembly (17).
8. If damaged or worn, replace with new sub-assemblies.
9. Remove any foreign material from gear teeth of the beveled gear sub-assembly (10) before reassembly.

REASSEMBLY OF THE UNIT (SEE PARTS LIST PL 190AG)

1. Install one new gear tube bushing (11) into the lower end of the rotary housing (12) and one new gear tube bushing (11) onto the bevel gear sub-assembly (10) up to shoulder.
2. Slide the rotary housing (12) and gear tube bushing (11) back onto the bevel gear assembly (10) making sure the gear teeth on the nozzle hub (16) and bevel gear sub-assembly (10) mesh properly.
3. Reassemble lower bushing retainer sub-assembly (17) onto shaft (8) by slowly rotating it as you slide it onto the shaft. *This procedure will help prevent damage to the shaft seals inside.*
4. Torque lower bushing retainer sub-assembly (17) to 40 lb-ft (54 nm).
5. Replace the drive link (18) and lower screw shield (19).
6. The bottom of the shaft should pass through the drive link so it is about flush with the bottom of the drive link.
7. Apply Loctite 243 or 242 to threads of hex head cap screw (20) and thread into shaft (8).
8. Holding the rotary housing (12), torque hex head cap screw(20) to 5 lb-ft (7 nm).
9. Install gasket (4) onto shaft (8) at the upper end of the shaft.
10. Apply Loctite 243 or 242 to threads of the upper shaft seal body sub-assembly (2) and reassemble onto shaft (8) by slowly rotating it you slide it onto the shaft.
11. This procedure will help prevent damage to the shaft seals inside.
12. Torque upper shaft seal body sub-assembly (2) to 50 lb-ft (68 nm).
13. Complete the reassembly by installing the groove pin (7) into shaft (8).

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

1. 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.
2. Insert the coupling (8) through the hole in the top of the 190 inlet casting.
3. The slot on the coupling (8) should be aligned and indexed over the groove pin and drive shaft on the 190 assembly.
4. The air motor drive assembly can now be rotated until the through holes on the aluminum adapter (3) align with the m5 female threaded inlet holes on the air motor drive assembly.
5. Using a 4 mm hex Allen Wrench, secure the gear motor sub-assembly (14) to the aluminum adapter (3) using two m5 bolts (1) and spring lock washers(2). ***Before re-installing in a tank, connect an air line to the air motor drive to make sure the unit works properly.***

ITEM	PART NO.	DESCRIPTION
1	46340-190	Air Motor Drive Assembly
★	2	CP7717-2-124-VI O-Ring, Viton®
★	2A	CP7717-2-214-VI O-Ring, Viton®
★	3	18330-316EPR Upper Shaft Seal Body Sub-Assembly, Stainless Steel, Type 316 & Ethylene Propylene Rubber
★	4	CP58362-NY Gasket, Nylon
5	CP55000-3-IZP	Ground Screw, #10-32 x 3/8" Lg., Steel, Zinc Plated
6	18335-2-SS	Liquid Inlet Body-Mounting Plate Sub-Assembly, Type 316 Stainless Steel (1" NPT Conn.)
6	B18335-2-SS	Liquid Inlet Body-Mounting Plate Sub-Assembly, Type 316 Stainless Steel (1" BSPT Conn.)
★	7	CP19109-SS Groove Pin, Stainless Steel
8	CP19097-__-316SS	Shaft, Type 316 Stainless Steel (For Model #AA190AG-__)
9	CP19098-__-316SS	Extension Tube, Type 316 Stainless Steel (For Model #AA190AG-__)
10	18331-316SS	Bevel Gear Sub-Assembly, Type 316 Stainless Steel
★	11	CP19100-CGRTEF Gear Tube Bushing, Teflon® Carbon Graphite Filled (2 Req'd.)
★	12	CP19088-316SS Rotary Housing, Type 316 Stainless Steel
★	13	CP19104-CGRTEF Nozzle Hub Bushing, Teflon® Carbon Graphite Filled (2 Req'd.)
14	**	Spray Nozzle, Solid Stream WashJet Nozzle (2 Req'd), Hardened Stainless Steel (1/4" NPT Conn. or 1/4" BSPT Conn.) See Ind. Catalog and D.S. #15659 (WashJet)
15	CP19105-316SS	Rotary Housing Plug, Type 316 Stainless Steel (Left Hand Thd.)
16	CP19086-316SS	Nozzle Hub, Type 316 Stainless Steel (N.P.T. Conn.)
16	CPB19086-316SS	Nozzle Hub, Type 316 Stainless Steel (B.S.P.T. Conn.)
★	17	18332-316EPR Lower Bushing Retainer Sub-Assembly, Type 316 Stainless Steel and Teflon® Carbon Graphite Filled & Ethylene Propylene Rubber
18	CP19091-316SS	Drive Link, Type 316 Stainless Steel
19	CP19103-316SS	Lower Screw Shield, Type 316 Stainless Steel
20	CP18328-316SS	Hex. Head Cap Screw, Type 316 Stainless Steel

No. AA190AG-__+**, Air Motor-Driven Tank Washer (with Shaft & Extension Length)

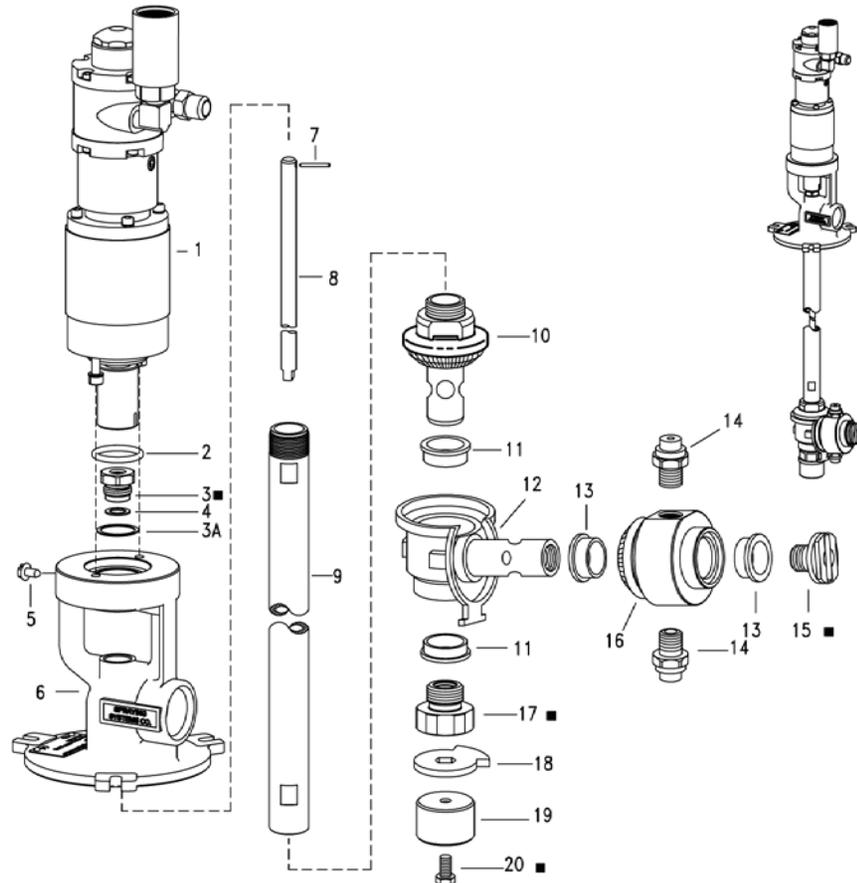
No. AAB190AG-__+**, Air Motor-Driven Tank Washer (with Shaft & Extension Length)

** Specify Spray Nozzle Number and Material.

Example: 1/4MEG-0020, Hardened Stainless Steel WashJet® Nozzle

■ NOTE: See torque requirements & Loctite notes for reassembly of the parts.

ITEM NO.	TORQUE REQUIREMENTS		LOCTITE ADHESIVE
	POUND.-FT.	NEWTON METER	TYPE USED
2	50 LB.-FT.	68 Nm	243 OR 242
15	20 LB.-FT.	27 Nm	243 OR 242
17	40 LB.-FT.	54 Nm	243 OR 242
20	5 LB.-FT.	7 Nm	243 OR 242



★ SOLD IN KITS ONLY- AB190AG - KIT - SPARE PARTS KIT (INCLUDES ALL ITEMS MARKED WITH "★")

DESCRIPTION:
No. AA190AG-__ & No. AAB190AG-__
AIR MOTOR-DRIVEN TANK WASHER



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Rev. No. 5

Ref.

Parts List No.
PL 190AG
SHEET OF

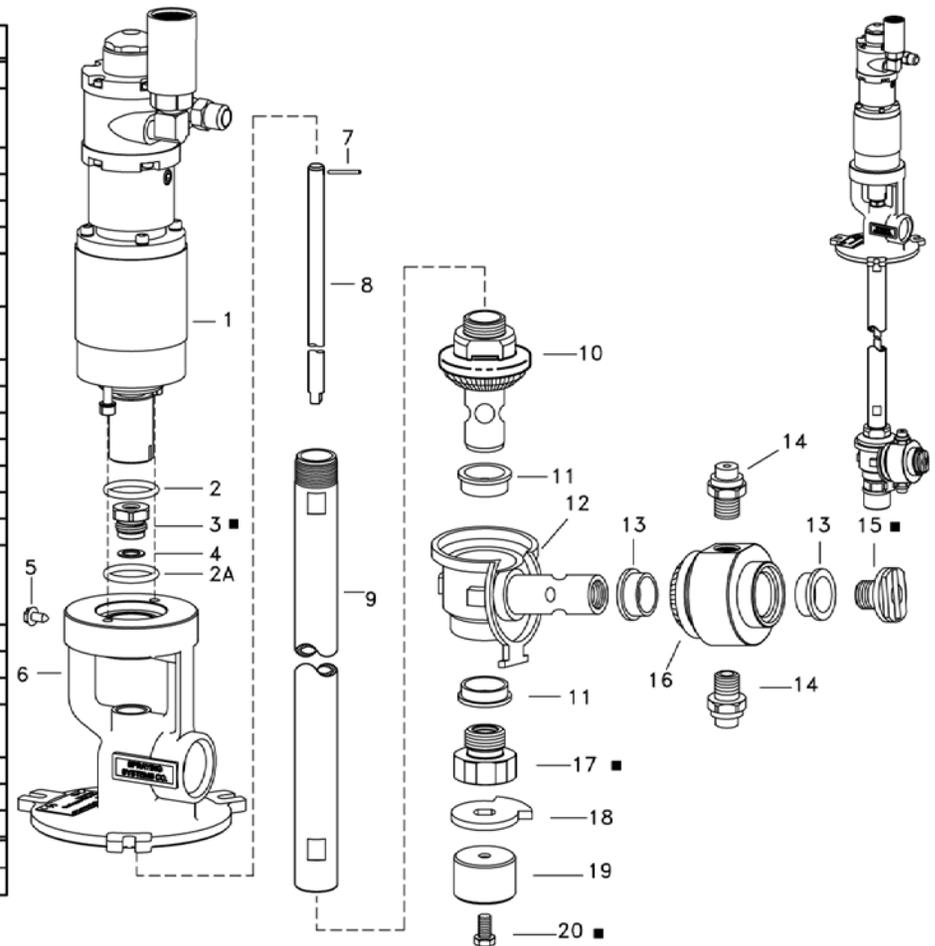
ITEM	PART NO.	DESCRIPTION
1	46340-190	Air Motor Drive Assembly
★ 3	18330-316EPR	Upper Shaft Seal Body Sub-Assembly, Stainless Steel Type 316 & Ethylene Propylene Rubber
★ 2	CP7717-2-124-VI	O-Ring, Viton®
★ 2	CP7717-2-214-VI	O-Ring, Viton®
★ 4	CP58362-NY	Gasket, Nylon
5	CP55000-3-IZP	Grounding Screw, #10-32 X 3/8" Lg., Steel, Zinc Plated
6	18335-2-SS	Liquid Inlet Body-Mounting Plate Sub-Assembly, Type 316 Stainless Steel (1" NPT Conn.)
	B18335-2-SS	Liquid Inlet Body-Mounting Plate Sub-Assembly, Type 316 Stainless Steel (1" BSPT Conn.)
★ 7	CP19109-SS	Groove Pin, Stainless Steel
8	CP19097-__-316SS	Shaft, Type 316 Stainless Steel (For Model #AA190AGH-__)
9	CP19098-__-316SS	Extension Tube, Type 316 Stainless Steel (For Model #AA190AGH-__)
10	18331-316SS	Bevel Gear Sub-Assembly, Type 316 Stainless Steel
★ 11	CP19100-CGRTEF	Gear Tube Bushing, Teflon® Carbon Graphite Filled
★ 12	CP19088-316SS	Rotary Housing, Type 316 Stainless Steel
★ 13	CP19104-CGRTEF	Nozzle Hub Bushing, Teflon® Carbon Graphite Filled (2 Req'd.)
14	**	Spray Nozzle, Solid Stream WashJet Nozzle (2 Req'd), Hardened Stainless Steel (1/4" NPT Conn. or 1/4" BSPT Conn.) See Ind. Catalog and D.S. #15659 (WashJet)
15	CP19105-316SS	Rotary Housing Plug, Type 316 Stainless Steel (Left Hand Thd.)
16	CP19086-SS	Nozzle Hub, Type 316 Stainless Steel (N.P.T. Conn.)
16	CPB19086-SS	Nozzle Hub, Type 316 Stainless Steel (B.S.P.T. Conn.)
★ 17	18332-316EPR	Lower Bushing Retainer Sub-Assembly, Type 316 Stainless Steel, Teflon® Carbon Graphite Filled & Ethylene Propylene Rubber
18	CP19091-316SS	Drive Link, Type 316 Stainless Steel
19	CP19103-316SS	Lower Screw Shield, Type 316 Stainless Steel
20	CP18328-316SS	Hex. Head Cap Screw, Type 316 Stainless Steel
		No. AA190AGH-__+**, Air Motor-Driven Tank Washer (with Shaft & Extension Length)
		No. AAB190AGH-__+**, Air Motor-Driven Tank Washer (with Shaft & Extension Length)

** Specify Spray Nozzle Number and Material.

Example: 1/4MEG-0020, Hardened Stainless Steel WashJet® Nozzle

■ NOTE: See Torque Requirements And Loctite Notes For Reassembly Of The Parts

ITEM NO.	TORQUE REQUIREMENTS		LOCTITE ADHESIVE
	POUND-FT.	NEWTON METER	TYPE USED
3	50 LB.-FT.	68 Nm	243 OR 242
15	20 LB.-FT.	27 Nm	243 OR 242
17	40 LB.-FT.	54 Nm	243 OR 242
20	5 LB.-FT.	7 Nm	243 OR 242



★ SOLD IN KITS ONLY- AB190AG - KIT -
SPARE PARTS KIT (INCLUDES ALL ITEMS MARKED WITH "★")

DESCRIPTION:
NO. AA190AGH- & No. AAB190AGH-
AIR MOTOR-DRIVEN
TANK WASHER

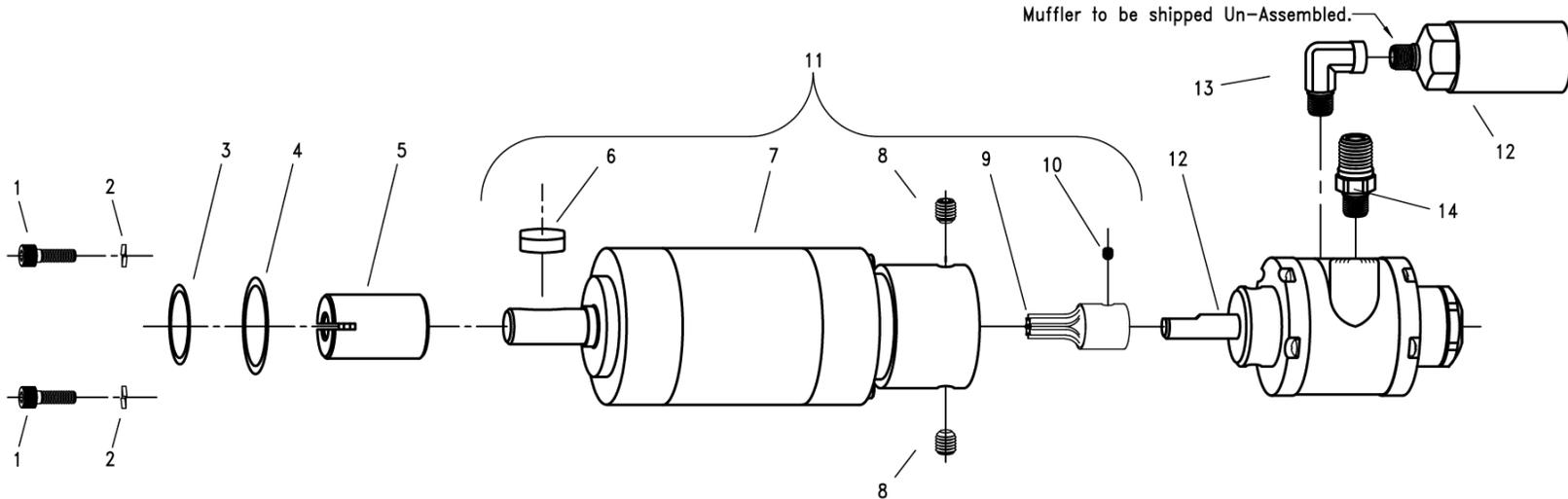


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PL 190AGH
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ITEM	PART NO.	DESCRIPTION
1	CP46766-20-316SS	Metric Socket Head Cap Screw, M5 x 0.8 x 20 mm LG. Type 316 Stainless Steel (2 REQ'D)
2	CP46352-5-316SS	Metric Spring Washer, 5 mm, Stainless Steel Type 316 (2 REQ'D)
3	CP7717-2-214-VI	O-Ring, VITON®
4	CP7717-2-124-VI	O-Ring, VITON®
5	CP46343-316SS	Coupling, 316 Stainless Steel (For Model #AA090AG-- OR AA190AG--)
6	CP46349-4-IBO	Metric Key, 5 mm Thick, Steel
7	CP46342	Gear Motor
8	CP46344-8-IBO	Metric Set Screw, Cup Point, M8 x 1.25 x 8 mm LG. Alloy Steel, Black Oxide Coating (2 REQ'D)
9	CP46347-1	Motor Pinion, Steel
10	CP46346-4-IBO	Metric Set Screw, Cup Point, M4 x .7 x 4 mm LG. Alloy Steel, Black Oxide Coating
11	46351	Gear Motor Sub-Assembly (Consists Of The Following Items 6, 7, 8, 9 & 10)
12	46350	Air Motor, Gast 1UP-NRV-10 & Air Motor Muffler, Gast AF350, CE Certified
13	CP38674-7	90° Street Elbow, 1/8 NPT (M) x 1/8 NPT (F), Brass
14	CP26396-1	Hex Pipe Nipple, 1/4 NPT (M) x 1/8 NPT (M), Brass
No. 46340-190 Air Motor Assembly (For Model #AA090AG-- or AA190AG--)		

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).

DESCRIPTION:

No. 46340-190
Air Motor-Driven Assembly

For 090 & 190
Tank Washers



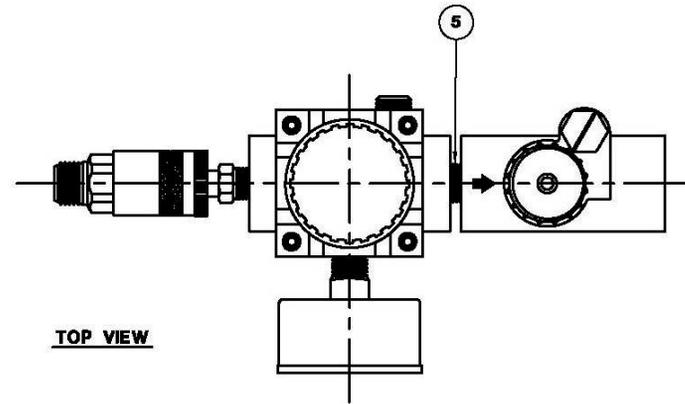
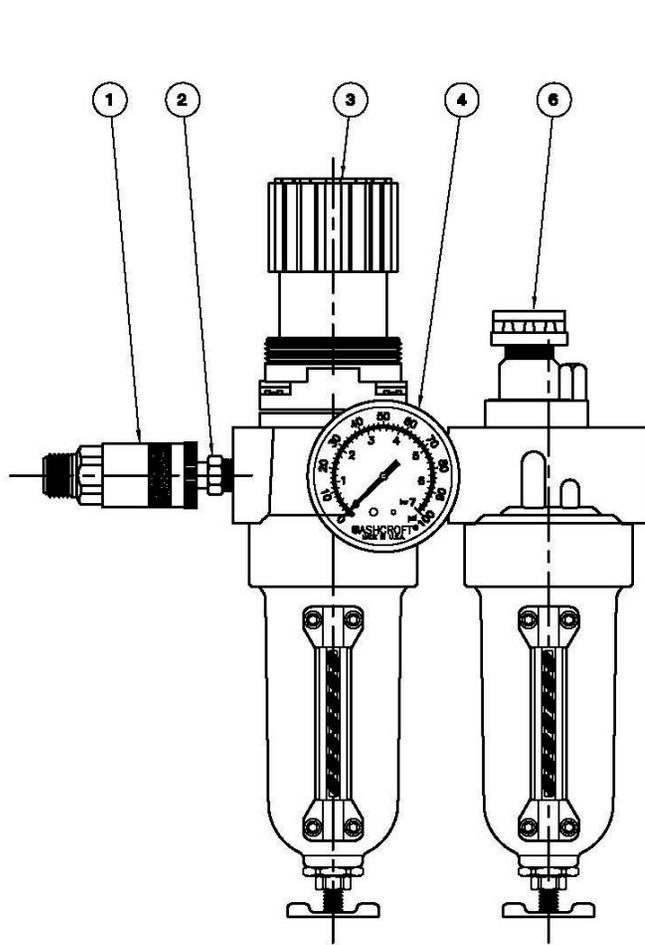
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Rev. No. 4

Ref.

Parts List No.
PL 46340-190
SHEET OF



TOP VIEW

ITEM	PART NO.	DESCRIPTION
1	CP22023	Coupler, Brass
2	CP22024-1	Coupler Nipple, Steel
3	CP22025	Filter / Regulator
4	26383-1/4-100	Gauge
5	CP7998-7/8	Close Nipple, Brass
6	CP22027	Lubricator
No. 21030 Lubricator Assembly		

DESCRIPTION:

No. 21030 LUBRICATOR ASSEMBLY



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Rev. No.

Ref.

Parts List No.

PL 21030

SHEET OF

January 18, 2010
Wheaton, Illinois, USA

EC DECLARATION OF CONFORMITY

We,



Spraying Systems Co.
Experts in Spray Technology

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 AA190AG, AA190AGH

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

Ref. no.	Title	Edition/date
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:

A handwritten signature in black ink, appearing to read "Robert J. Adams", is written over a horizontal line.

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



Spraying Systems Co.[®]
Experts in Spray Technology

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